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PSYCHOSOCIAL EFFECTS OF TRAUMATIC INJURIES IN ROAD TRAFFIC ACCIDENT VICTIMS IN THE KUMASI METROPOLIS

BY

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DECLARATION

This is to certify that, this thesis is the result of the original research undertaken by Augustine Yaw Assah towards the award of Master of Philosophy (MPhil) degree in nursing, in the School of Nursing and Midwifery, University of Ghana. I so declare that this thesis has not been partly or fully submitted for any other degree concomitantly. All sources, authors and publishers of textbooks and articles used in this study have been duly acknowledged. The study was conducted with the guidance and supervision of Dr Samuel Adjorlolo and Dr. Gideon L. Puplampu both of the School of Nursing and Midwifery, University of Ghana.

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ABSTRACT

Mental health problems, especially depression, are major causes of disabilities globally. Among the causes of mental health problems, injuries, including those resulting from road traffic accidents (RTAs) are major contributors. Efforts are therefore made earnestly by every country globally, as well as Ghana over the years to control and reduce the incidence and mortality of RTA and its related injuries. However, mental health problems associated with RTA injuries are marginalized during the care of RTA injured victims, whilst focusing on their physical problems. Using the Lazarus and Folkman's Transactional Stress model, this study sought to identify the psychosocial problems resulting from injuries sustained from RTAs, whilst assessing the impact of appraisals, coping styles and social support in the development of psychosocial problems. A cross-sectional survey was used to collect data from 382 accident victims with injuries in three hospitals within the Kumasi metropolis, using validated data collection tools. The statistical Package for Social Sciences (SPSS) version 21 was used to analyze the collected data, using descriptive, Pearson's Chi square, Analysis of Variance (ANOVA), Independent t-test, Correlational and Hierarchical Multiple Regression tests. The findings indicated that, a number of patients with RTA injuries developed psychosocial distress (40.6%) and Post-traumatic Stress Disorder (22.0%). Most victims appraised their injuries as threat but controllable. The most common coping style adopted by respondents was the task oriented coping with most participants demonstrating moderate to high perceived social support. Significant associations were found between injury characteristics and psychosocial problems but not with demography. ANOVA and Independent t-test indicated significant variations in psychosocial problems on the various types, locations and post-injury duration of injuries. Hospitalized patients also demonstrated higher levels of psychosocial problems compared with non-hospitalized patients. Appraisal of threat, centrality, and

uncontrollability significantly and negatively correlated with psychosocial problems. Appraisal of challenge and controllability as well as total perceived stressfulness of the injuries showed significant positive relationship with psychosocial problems. On coping styles, task oriented and avoidant coping styles were significantly and negatively related with psychosocial distress but not with PTSD. Emotion focused coping also showed significant positive relationship with psychosocial distress. Social support was a significant moderator of avoidant coping and psychosocial problems. In conclusion, RTA victims with injuries have increased risk for developing psychosocial problems. The findings therefore demonstrate the need for comprehensive psychosocial assessment of injured RTA victims for early recognition and treatment of psychosocial morbidities.

Keywords: Psychosocial problems, Injury Appraisal, Coping, Perceived Social Support, Post-traumatic Stress Disorder, Road Traffic Accidents

DEDICATION

This work is dedicated to God almighty, my beloved mother, Janet Adwoa Benewaah, whose unrelenting commitment, love and sacrifices has brought me thus far. I also dedicate this work to my dearest wife, Anita Obeng Fremah; my awesome child, Nana Afia Benewaah Assah.

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LIST OF ABBREVIATIONS

AC	Avoidant Coping
CISS	Coping Inventory for Stressful Situations
EFC	Emotion Focused Coping
GHQ	General Health Questionnaire
GHS	Ghana Health Services
KATH	Komfo Anokye Teaching Hospital
LMICs	Low and Middle Income Countries
MSPSS	Multidimensional Scale of Perceived Social Support
NRSC	National Road Safety Commission
PSS	Perceived Social Support
PTSD	Post-traumatic Stress Disorder
RTA	Road Traffic Accident
SAM	Stress Appraisal Measure
SPSS	Statistical Product and Service Solutions
TOC	Task Oriented Coping
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Trauma is a widespread occurrence, common all over the world at all times. Etymologically, "trauma" originated from an ancient Greek word, literally meaning "wound" or 'damage' (Engelbrecht & Jobson, 2014). The term was used to refer to only physical injuries, but currently, it is usually associated with varieties of harm from physical to emotional or psychological insults. According to the American Psychiatric Association [APA] (2013), a traumatic event is described as any incident that exposes a person to either a threatened or actual death, fatal injury or sexual violence. This makes the use of the term "trauma" wide, although in most instances, it used to refer to "a more serious injury or accident" (Richmond & Aitken, 2011, p. 2742). A global burden of disease study in 2013 estimated a global incidence of 970 million injuries globally, with 4.8 million deaths (Haagsma et al., 2016). Traumatic injuries may involve soft tissues or musculoskeletal system (Torgbenu et al., 2017) and other vital internal organs such as the brain, spleen, liver, kidneys, lungs and the heart (Smeltzer et al., 2008). Although traumatic injuries are usually sustained in gunfire, battering, falls, tribal conflicts and occupational injuries (Afukaar, Antwi, & Ofosu-Amaah, 2010; Oyeniyi et al., 2017) and non-motorized bicycles (Damsere-Derry & Bawa, 2018) road traffic accidents (RTAs) remain one of main sources in both developed and developing countries (Adams, Alhassan, & Yabasin, 2016; Biney et al., 2013; Sullivan, 2017; Zuraik & Sampalis, 2017).

RTAs are considered major burden for every country globally. Worldwide, between twenty to fifty four million people are believed to suffer from non-fatal injuries annually due to RTAs, with approximately 1.35 million deaths relating directly to RTAs and/or its related consequences

(Haagsma et al., 2016; World Health Organization [WHO], 2018a). Most trauma victims are rendered temporarily or permanently disabled, and ninety percent (90%) of these disabilities are associated with RTAs (Cartwright, 2017; Rissanen, Berg, & Hasselberg, 2017. RTA related injuries are ranked as the ninth leading cause of disabilities worldwide and projected to become the seventh by 2030 in all age groups (WHO, 2013). RTAs usually involve more than one party. The impact of injury thereof is to be appreciated in veneration to all individuals that may be involved in road traffic accidents or other notable mechanisms including pedestrians, motorcyclists, bicyclists as well as drivers, conductor, and passengers occupying a vehicle (Papadakaki et al., 2018; Sheth, 2001; UI Baset et al., 2017; Wells, 2007). These category of victims as described were the focus of this study.

Crucially, however, more than 90% of the global incidence of traumatic injuries ensue in the low and middle income countries (LMICs) such as Ghana (UI Baset, 2017; WHO, 2018a). Klemisch (2016) averred that, the chief cause of disability in LMICs is trauma. More people are expected to die or be rendered disabled from the menace of RTA by 2030 in Africa due to the persistent developmental, institutional and attitudinal challenges on the continent (Adeloye et al., 2016; Peden, Kobusingye, & Monono, 2013). For instance, the incidence of RTA in Ghana is ranked 31st worldwide, and RTA is among the 10 leading causes of death and disabilities in Ghana, which ranks 23rd worldwide (Yiadom, McWade, Awoonor-Williams, Appiah-Denkyira, & Moresky, 2018; WHO, 2017; WHO, 2018b). Previous studies have identified RTAs to be the leading cause of injuries in Ghana (Biney et al., 2013; Torgbenu et al., 2017). For the past five years, cases of RTA in Ghana and its related injuries has seen incremental changes (see table 1.1) in both the number of crashes and number injuries sustained.

Table 1.1: Statistics of Reported Cases of RTAs in Ghana (and Ashanti Region) from 2015 to 2019

Year	Number of RTAs		Number of Injuries		Number of Deaths	
	Ashanti Region	Nationwide	Ashanti Region	Nationwide	Ashanti Region	Nationwide
2015	1, 064	10, 852	854	10, 565	153	1, 802
2016	1, 901	11, 378	1, 870	10, 438	310	2, 084
2017	2, 286	12, 843	2, 262	12, 166	335	2, 076
2018	2, 734	13, 645	3, 093	13, 677	396	2, 341
2019	2, 847	13, 877	3, 549	16, 640	453	2, 284

Compiled from yearly reports of the National Road Safety Commission of Ghana, 2015 – 2019.

The high prevalence of RTA related injuries in Ghana could equally be attributed to all related factors common in LMICs. These include inadequate transport-related legislation and enforcement of existing legal frameworks on road safety, such as wearing of seatbelts, use of helmets for riders, vehicle maintenance culture among others (Torgbenu et al., 2017; UI Baset et al., 2017). Moreover, the number of registered cars in recent years have been skyrocketing (Solanki et al., 2016) in most LMICs. For example, in Ghana, the number of motor vehicles registered moved from 159.00 Unit in 2005 to 693.00 Unit in 2010, and to 890.00 Unit in 2015 (CEIC Data, 2020). More importantly, Ghana has also seen a rather increasing trend in the use of commercial two and three wheel cycles, popularly referred to as "okada" and "Pragya". The commercial use of this means of transport is illegal in Ghana and their activities have not been regulated. Consequently, motor cycle and tricycle related accidents in the country have been alarming (Blankson, Amoako, Asah-Opoku, Odei-Ansong, & Lartey, 2019). With individuals and politicians advocating and campaigning to legalize the use of these motor cycles, coupled with low law enforcement, the worse may be expected in the future.

1.1.1 Consequences of Traumatic Injuries

Fatal and non-fatal injuries have negative impact on the general health status of survivors of RTAs, including their post-injury quality of life. These effects are as well felt among his immediate relatives, posing as a burden not only to the victim, but the family, the community and the country at large. These effects arise from loss of jobs, high cost of treatment, and the potential harmful effect on the family's functioning. Essentially, the cost incurred on the whole society from RTA injuries are subject to the consequences of these injuries (Makuu, 2018; Weijermars et al., 2016). It has been estimated that, countries across the world spend about 3% of their Gross Domestic Product (GDP) on RTAs, which may extend to about 5% in LMICs (WHO, 2018a). For instance, in Ghana, the National Road Safety Commission has reported that, about $ 230 million is spent on RTAs annually (National Road Safety Commision, 2018). Of critical concern is the percentage of youth and males involved in RTA (Abegaz & Gebremedhin, 2018; Bashah, Dachew, & Tiruneh, 2015; Zuraik & Sampalis, 2017) who are major drivers of every country's economy (Durand, 2015). RTA is the leading cause of disabilities adjusted life years in individuals between the ages of 10 and 49 years (Vos et al., 2020). Losing the major drivers of the economy through RTA has dire consequences on the economy.

Traumatic injuries are also noted to have profound impact and serve as major stressors on human cognition, behavior and emotion. It has been asserted that, injured patients can unexpectedly experience stress emanating from pain, fear, confusion, unplanned hospitalization, perceived and actual loss of body structures and functions which may persist for years after the initial injury (Nasirian, Fagevik Olsen, & Engstrom, 2018). Most of these victims may have a significantly high degree of resilience and coping and do recover well after the injury, yet, a good proportion of them have poor coping abilities with their problems. They feel desperate, powerless,

worthless and uncertain about their lives. These negative thoughts and feelings as well as life after the trauma can lead to disorders such as depression, panic attacks, generalized anxiety states, social dysfunction and other mental health sequelae (Vincent, Horodyski, Vincent, Brisbane, & Sadasivan, 2015). Previous studies in western countries and some few in Africa indicate that, between 6 to 65% of injured victims are likely to develop a psychosocial problems after the injury, some of which can persist for years to decades. (Ahl, Lindgren, Cao, Riddez, & Mohseni, 2017; Ajibade, Adeolu, Adeoye, Moridiyat, & Oladeji, 2015; Idrees, Faize, & Akhtar, 2017; Papadakaki et al., 2018; Tutton, Seers, & Langstaff, 2012; Vincent et al., 2015; Wiseman, Curtis, & Lam, 2015). The forgoing discussion demonstrate the influence of appraisals, coping abilities and perceived social support (PSS) in the psychopathology of the injured victim.

Unsurprisingly, mental health problems are major health concerns in LMICs. Notably, LMICs are responsible for more than eighty percent of years lost to disability from depression globally (WHO, 2017). Previous studies in these parts of the world indicate that, common mental health problems like depression, anxiety and other affective disorders are higher in the injured population compared with the general population (Jacob, Pizzol, Veronese, Stubbs, & Koyanagi, 2019). However, a worrying situation is the fact that vast number of individuals with mental health disorders in these LMICs (including Ghana) do not get suitable treatment (Cuijpers, Karyotaki, Reijnders, Purgato, & Barbui, 2018), probably because the affected individuals are not identified for effective treatment or are poorly diagnosed and poorly treated.

In Ghana, depression and anxiety disorders are described to be the 4th and 10th leading causes of disability respectfully (Institute for Health Metrics and Evaluation, 2017). More than six hundred and fifty thousand Ghanaians were estimated to be suffering from severe mental disorder while more than two million were believed to be suffering from moderate to mild mental disorders

as at 2018 (WHO, 2019). Yet, and sadly, treatment gap for individuals with mental health disorders is around 98% (WHO, 2019). With the worrying trend and intriguing figures of RTA cases and injuries in Ghana, it was essential to establish the psychosocial problems that may result from physical trauma sustained in RTAs in the country. This study therefore sought to investigate the psychosocial impact of physical injuries sustained during RTAs in Ghana using the Lazarus and Folkman's Transactional Stress Model.

1.1.2 Stress Appraisal, Coping and Psychosocial Problems

It is believed that, stressors in themselves do not necessarily cause psychological problems. This is because, every individual is believed to possess unique personality traits and may act as buffers against these stressors. These individual features include a person's cognitive appraisal of a stressor and how that individual is able to adjust or adapt to the stressful situation, using coping styles (Folkman, 2013; Thoits, 2013). Appraisal generally refers to how an individual assesses something or a person. Coping on the other hand is the way the person deals with a difficult (stressful) situation successfully. According to transactional stress models, stress is an "emotional process" that rely on definite anticipations exhibited by the individual regarding the inference to and result of a particular encounter. Appraisal and coping can be negative or positive, and the use of any type may to some extent, predict the psychological consequence of an individual with stress (Carver & Connor-Smith, 2010; Lazarus & Folkman, 1984).

There are various ways in which appraisal and coping could be conceptualized. Some have conceptualized appraisals as contributing to coping strategy, with coping determining the psychological outcome of the individual with stress. Others conceptualized appraisal as a moderator of social support on the relationship between stress and psychological health (Nicholls, Polman, & Levy, 2012; Noor, Gul, Khan, Shahzad, & Aqeel, 2016; Szkody & McKinney, 2020).

In this study, appraisal was seen as a two-step process, where primary stress appraisal (threat, centrality and challenge) leads to a secondary stress appraisal (controllability). The overall perception about how a situation is seen as stressful, was seen as an independent construct within the appraisal measure, and could predict an individual's psychosocial outcome. Consequently, the choice of coping style (avoidant, emotion focused or task oriented) was seen as being influenced by appraisal and availability of perceived social support.

1.1.3 Perceived Social Support and Psychosocial Problems

Social support is believed to have significant influence on the development of psychosocial problems as it can as well determine how victims cope. Lower perception of social support are linked with higher levels of psychosocial problems and vice versa (Wethington, Glanz, & Schwartz, 2015). Social support is seen as a multidimensional construct and has been defined differently by researchers over the years. Hitherto, the arguably best known and most influential conceptualization of social support has been provided by Cobb (1976), who described social support as "the information leading an individual to believe that he is cared for and loved; esteemed and valued; and belongs to a network of communication and mutual obligation" (Cobb, 1976, p. 300). This can be perceived (or emotional), structural or received (Huang & Chengalur-Smith, 2019).

This study conceptualized social support as the support the injured victim believes is available from family, friends and significant others. This appraisal can influence the way the individual also appraises his stress, the way he copes and the experience of psychosocial problems. This phenomenon could be explained by two hypotheses on effects of social support; "main effect" and "buffering effect" (S. Cohen, 1984). The "main-effect" hypothesis propounds that, there is a direct effect of social support on psychological health irrespective of the degree or type of stress

whilst the "buffering effect" hypothesis avow that, negative consequences of stressful events can be reduced by social support. The latter hypothesis is exclusively present and useful in the presence of a current stressor (S. Cohen, 1984; Szkody & McKinney, 2020). Both hypotheses were applied in the current study.

1.2 Statement of Problem

Psychosocial distress are salient public health concerns globally due to the detrimental effects they have on the individual's total wellbeing, beside the subsequent effects incurred on the whole community. A more worrying situation is the relationship between these psychosocial distress and suicide, as these problems are major predictors of attempted suicide and actual suicide (Cheref, Benoit, & Walker, 2019).

In spite of the large empirical evidence linking road traffic injuries to psychosocial problems, it remains unclear if these evidence are applicable in LMICs (where RTAs hover above 90% of the global incidence) as bulk of these evidence come from high income countries. Although few of the studies have examined the ethnic and cultural variations in the development of these psychosocial sequelae, their applicability in other cultures cannot be meaningfully explicated since culture is dynamic and diverse (Marshall, Schell, & Miles, 2009). Further, most of the few studies from LMICs have focused only on patients with injuries affecting the brain and spinal cord (e.g., Adam et al., 2016; Adjorlolo, 2016) and/or orthopedic injuries (e.g. Obayemi et al., 2020; Torgbenu et al., 2017). These reasons may hamper successful translation of the extant, foreign-based studies into other injured populations.

Research has indicated that, undiagnosed and untreated mental health problems negatively impact treatment plans and can increase patients' length of stay at the hospital, which can inversely worsen the experience of psychosocial distress (Sullivan et al., 2017). This, notwithstanding,

physicians and nurses caring for injured patients are primarily concerned with their physical problems whilst neglecting their psychosocial health (Sullivan et al., 2017; Tudo et al., 2017) even though there is an ongoing global advocacy for routine psychosocial screening of all trauma patients for early detection and management (Goh, Ho, & Ng, 2019; Wiseman et al., 2015; Wiseman, Foster & Curtis, 2013; Wu, Zhang, Cheng, Lin, & Wang, 2017). The situation is not different from Ghana as psychosocial assessment is not included in the routine assessment plans of the trauma patient (Ministry of Health, 2011). Consequently, anecdotal evidence from most emergency and orthopedic centers in the country indicate that health professionals providing care to such patients rarely assess for psychosocial problems, except when there is an obvious brain or spinal cord damage. This could possibly be due to dearth of empirical evidence on the effects of these injuries on psychological reactions in the country. The phenomenon is likely to add to and compound the already huge treatment gap of mental health problems in the country. It was therefore expedient to establish the empirical evidence in this respect to properly guide emergency and trauma care practices in Ghana whilst attempting to bridge some of the gaps aforementioned.

1.3 Purpose of the Study

The purpose of the current study was to examine the psychosocial consequences of traumatic injuries in victims of RTA in the Kumasi Metropolis.

1.4 Specific Objectives of the Study

Specifically, the study sought to:

1. describe the injury characteristics, injury appraisal, coping mechanisms, perceived social support and psychosocial problems of patients with road traffic accident injuries.
2. determine the relationship between respondents' background information (socio-demographic and injury characteristics) and psychosocial problems.

3. examine the differences in psychosocial outcomes of respondents among their background characteristics
4. examine the relationships between coping, appraisal, social support and psychosocial problems.
5. evaluate the influence of social support on the relationship between coping and psychosocial outcomes of RTA injuries.

1.5 Significance of the Study

This study was conducted to identify the psychosocial problems that may be faced by victims of road traffic crashes with injuries. The findings of this study will be a vital contribution to nursing knowledge in managing trauma patients and essentially guide nurse managers and clinicians working with trauma patients to provide quality psychosocial care. It is again envisaged that the findings will inform authorities in the emergency departments and the hospitals to institute and effectively implement follow up plans to help identify patients that may experience psychosocial problems after discharge. In addition, the findings will help emergency departments to redesign their assessment plans to include comprehensive psychosocial assessment in the routine assessments of all patients especially trauma patients.

It will also help the Nursing and Midwifery Council of Ghana and institutions training emergency health practitioners to include psychosocial assessment skills and procedures in their curriculum. Additionally, this study will be vital in adding to the growing knowledge in the field of physical trauma and enhance future study in the field in Ghana and Africa at large.

Again, the study will provide vital information to major stakeholders like the mental health authority on strategies to promote the WHO Mental Health Gap Action Programme (mhGAP) as early identification of persons with mental disorders will enhance their treatment. This will also

go a long way to close some of the gaps in mental health research, whilst using the information to strengthen mental health care systems in the country and globally.

1.6 Operational Definition of Terms

Road Traffic Accident: unplanned collisions that involves at least one vehicle; two or three wheeled cycles that occurs on public roads and in which at least one injury or fatality is recorded.

Traumatic Injuries: injuries to the skin, muscles, bones or internal structures of the chest and abdominal cavity that were caused by road traffic accidents.

Coping: ability of (an injured) person to successfully deal with and overcome problems posed by the injury, using either personal strength or/and external assistance.

Appraisal: the way an injured person assesses his or her strengths and weaknesses in relation to how well the injury can be managed or coped with.

Social support: psychological, emotional and material resources provided to an injured person by close friends, relatives and other significant personalities to help cope with the injury and its consequences.

Psychosocial problems/distress: an unpleasant emotional, cognitive, behavioural or social experience that can potentially interfere with individual's coping abilities.

Hospitalized patient: any patient with RTA that had spent at least 24 hours on the ward during the recruitment process due to the RTA and its related injury (ies).

CHAPTER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.0 Introduction

This section focuses on the theoretical underpinnings and relevant empirical studies that are related to the current study. A vivid description of the Lazarus and Folkman's transactional stress model is given as it underpins the whole framework of the study.

2.1 Selection of a Theoretical Framework

'Stress' is an emotional feeling or physical tension that is multifactorial. Any event that requires the body to react, adjust or respond could be described as stressful. This description makes it appropriate to classify trauma as a stressor. Accordingly, various theories that seek to explain stress and psychosocial problems were reviewed; such as: the Selye's Systematic Stress theory, the Learned Helplessness Theory, Bandura's Self - Efficacy theory, and the Lazarus stress theory. Meanwhile, stress process models (Lazarus & Folkman, 1984) posit that life stressors cannot solely explain the degree of psychosocial sequelae of individuals, rather, some coping and /or behavioural factors may expound such relationships. It was therefore salient to identify models or a common model that consisted of constructs of stress and coping to better analyze the psychosocial sequelae of the physically injured patients. The choice of the "Lazarus and Folkman Transactional stress model" has these advantages compared to other stress theories outlined earlier.

2.1.1 The Transactional Stress and Coping Model (Lazarus & Folkman, 1984)

This model serves to guide the assessment of coping mechanisms in individuals exposed to stressful situations. It plays important part in health promotion, disease prevention and patient education in the health care industry (Glanz, Rimer, & Lewis, 2002). The model presents stress as

a transactional phenomenon, where stress is dependent on the interpretation given to a stimulus by the perceiver (Krohne, 2002). The concept of stress has been described by Lazarus as a state or feeling that the demands of the stressor surpasses available resources (personal and social). The effects imposed by stress on an individual is therefore dependent on the person's sense of danger, susceptibility and coping abilities; and not merely the stressful event itself (Lazarus, 1993).

Like any other psychological stress theory, this model evaluates two central concepts: the influence of cognitive appraisal of the stress on the emotions of the individual and how he is able to cope. Psychological stress was therefore described in this model to mean "a particular relationship between the person and environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing" (Lazarus & Folkman, 1986, p. 63). These stressors were described as life events which may refer to unexpected and unpredictable circumstances that are beyond the control of the person such as natural and manmade disasters (earthquakes, floods, tsunamis, wars, etc). It may also include events outside the individual's control that affect the individual or few others in the individuals' world like death of a loved one, divorce, road accidents and disability or life threatening illness. Road traffic injuries are usually unexpected and victims of RTA may grieve over the incident, injuries sustained and their consequences on their health and social function.

A key concept that is useful in appreciating the stress transactions is appraisal. The concept was founded based on impression that stress rely on definite anticipations exhibited by the individual regarding the connotation and result of a particular encounter. This cognitive process is influenced by two factors that can contribute to the individual's stress response: a tendency of threat by the stressor to the person (primary appraisal) and valuation of necessary resources to manage the stress imposed by the stressor (secondary appraisal) (Lazarus, 1996; Krohne, 2002).

Primary appraisal basically describes the relevance of the event or stressor on the victim's health and general wellbeing (Krohne, 2002). If an individual with an injury believes that it is not stressful at all, that person will make an irrelevant appraisal of the injury and may not utilize any coping mechanism. However, when the individual thinks the injury is distressing, he will need to identify appropriate means of coping with the situation (Groomes & Leahy, 2002). This stage is described as the second component of appraisal. At this stage, the individual evaluates himself and his resources to see what could be done about the situation. Various forms of appraisals are identified in literature, but the most common ones distinguished are threat, challenge and centrality (primary appraisal). Common components of secondary appraisal include uncontrollable and controllable (by self or by others). Different psychological problems are embedded in specific types of emotional reactions and the type of appraisal will define the degree to which symptoms will be experienced (Lazarus, 1993; Lazarus & Folkman, 1986; Mitchell, Brennan, Curran, Hanna, & Dyer, 2017; Olff, 2011).

The other concept in the model; coping was described as "the cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands of conflicts among them" (Lazarus & Folkman, 1984, p. 233). This concept is believed to be closely connected to appraisals, consequently, to "the stress relevant person-environment transactions". Various types and terms are used in literature to describe coping styles, but the most common dispositions are avoidant, emotion and task-oriented coping (Baqutayan, 2015; Folkman, 2013; Lazarus, 1993; Lazarus & Folkman, 1986; Olff, 2011; Smith & Kirby, 2011).

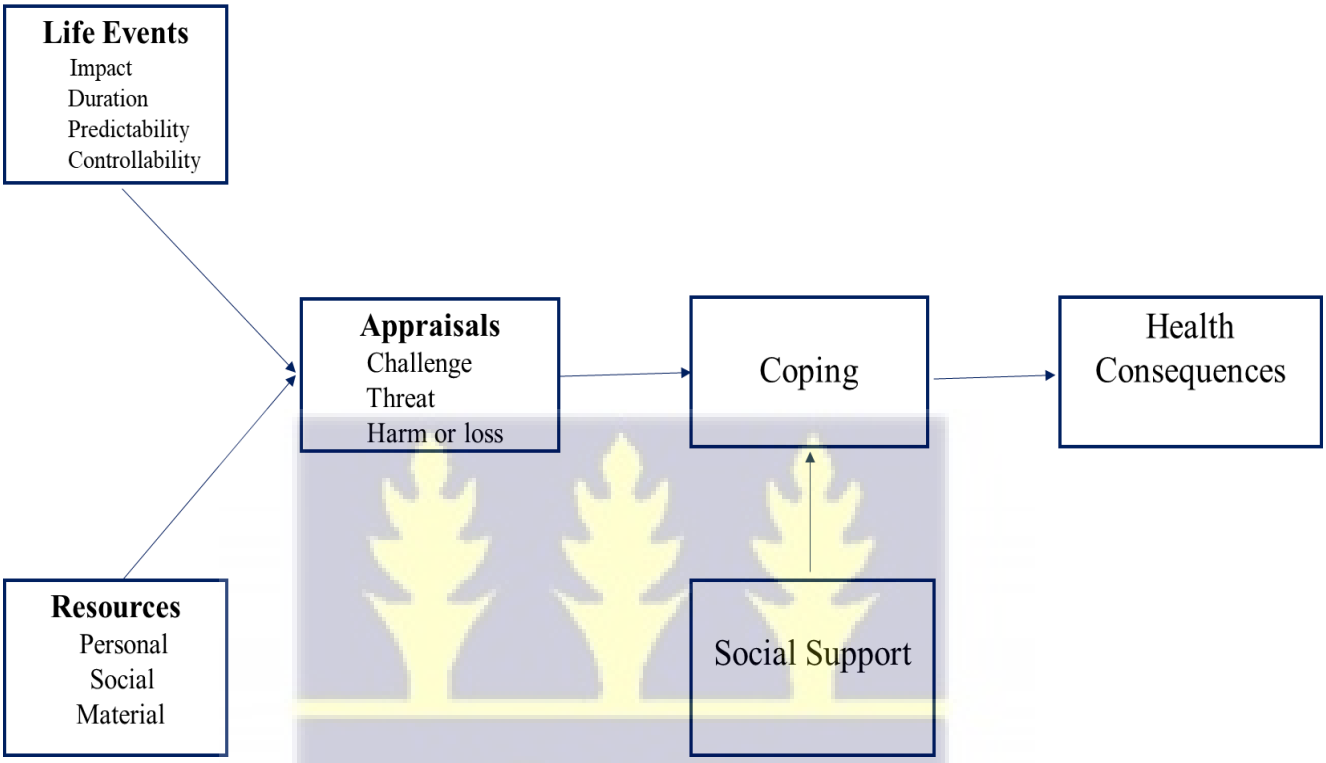

Figure 1.1: The Lazarus and Folkman's Transactional Stress Model

In this study, the model was used to examine psychosocial problems experienced by patients who had sustained traumatic injuries secondary to RTAs. The five constructs in the model (life events, resources, appraisals, coping, and social support as well as health consequences) were adopted and modified to suit the purpose of this study. The life events were conceptualized as RTA traumatic injuries, with characteristics including type, site and post-event duration. Resources were conceptualized as the individual's demographic variables. Appraisals were viewed as primary (threat, challenge, centrality) and secondary (controlled by self, controlled by others and uncontrollable) appraisals, with another variable measuring overall perceived stressfulness of the injury. Coping was also regarded as avoidant, emotion-focused or task-oriented coping. Social support was referred to as perceived support available from family members, friends and other significant individuals whilst health consequences were considered as psychosocial distress (with

symptoms of depression/anxiety, social dysfunction and lack of confidence) and post-traumatic stress disorder (PTSD).

Some previous studies have adopted part or whole of the model to examine various health consequences in diverse populations, example, emotional response in cancer patients (Hulbert-Williams, Morrison, Wilkinson, & Neal, 2013); physical and mental health in Palestinian and American Indians in Gaza (Kira, Omidy, & Ashby, 2014); mental health in undergraduate nursing programme is South Africa (Martin & Daniels, 2014); psychosocial outcome in patients with traumatic brachial plexus injury (Franzblau & Chung, 2014).

2.2 Concept of Mental Health

The WHO (2006) defined health as; "a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmities", underlining the significance of psychosocial wellbeing. Psychiatric problems, mental disorders or psychological disorders, as may be used by different authors, are described as abnormal adaptive response to an extrinsic (external environment) or intrinsic (internal environment) stressors. These abnormal adaptive processes are usually characterized by thoughts, feelings and behaviour that are not compatible or inconsistent with the norms of the individual's society and culture. This behaviour significantly interferes with normal functioning of the person within his social environment (Gelder, Gath, & Mayou, 1989; Shives, 2008).

A better description of a psychosocial problem or mental illness is gotten from the definition of mental illness by the APA. It is defined by the APA (2000) as "a clinically significant behaviour or psychological syndrome or pattern that occurs in a person and that is associated with present distress or disability or with significant increased risk of suffering, death, pain or disability or an important area of freedom; and not merely an expectable and culturally sanctioned response

to a particular event". Impliedly, to be classified as a healthy person, the psychological and social aspects of person cannot be marginalized. Standard patterns of behaviour and cognition are therefore expected to be manifested by the individual to be classified as mentally health or otherwise. Generally, psychiatric problems are classified as either organic (in which the structure of the brain is partly or wholly damaged) or neurotic (in which there is only a functional impairment with no obvious structural damage) (Gelder et al., 1989). In this study, psychiatric morbidities were evaluated in the context of functional derangements (neurosis), where the structure of the brain and nerves are intact.

Therefore, the concept of mental health expects an individual to equally maintain a stable psychological wellbeing even after a stressful life event, barring any organic damage secondary to the trauma. Normally, it is natural for the body to respond to life-threatening events by protecting itself from potential harm. However, some individuals overreact during this normal response and feel frightened and distressed even in the absence of the event or danger. These may produce various anxiety disorders common of which include Post-Traumatic Stress Disorder (PTSD, anxiety, depression, social dysfunction, acute stress disorder, among other phobic disorders. (APA, 2013; Warren et al., 2016; Wiseman et al., 2015; Zatzick et al., 2008). This abnormal reaction may as well affect the person's physiological functions such as the heartbeat, respiration rate and even musculoskeletal functions some of which can persist for many years.

2.3 Review of Related Studies

2.3.1 Traumatic injuries and Psychosocial Health

Psychosocial problems have been studied across many populations and statistically significant high levels of psychological morbidities have been reported. The trend is a worrying situation considering the impact of psychosocial problems on years of life lost to disability. (Arvidsdotter, Marklund, Kylen, Taft, & Ekman, 2016; Bosmans, Hofland, De Jong, & Van Loey, 2015; Idrees et al., 2017; Koenen et al., 2017; Rai et al., 2012; von der Warth, Hehn, Wolff, & Kaier, 2020). A lot of studies that used trauma populations have viewed trauma as an emotional insult from wars, crimes, assault, abuse, and many others (Dominguez-Gomez & Rutledge, 2009). Notably, among all the causes of disabilities, traumatic injuries are major contributors (Haagsma et al., 2016). Uniquely, injuries from RTAs are major health and social concerns and they need more attention than they have received in the past years.

Traumatic injuries may be perceived as almost the worst conceivable experience and the reactions of victims to traumatic injuries may be described to be akin to bereavement (Machisa et al., 2018). The prevalence of psychosocial problems following traumatic injuries differ in various studies. These have been related to a lot of factors such as diagnostic criteria or instrument used in the study, time of the study after the injury and the various definitions of trauma. Others include type of trauma or injury, location of the injury on the body part, socio-cultural factors among others (Ahl et al., 2017; Craig, Tran, et al., 2016; Roden-Foreman et al., 2018; Tudo et al., 2017). It is estimated that, between 6% and 51% of trauma victims develop psychosocial problems, globally. The prevalence in LMICs especially Africa is however higher than the global values, and up to sixty five percent of trauma victims are believed to develop psychosocial problems. The most prevalent psychosocial problems associated with road traffic injuries include post-traumatic stress

disorder (PTSD), depression, anxiety and social dysfunction (Ajibade et al., 2015; Craig, Elbers, et al., 2016; Craig, Tran, et al., 2016; Guest, Tran, Gopinath, Cameron, & Craig, 2017; Papadakaki et al., 2018; Weijermars et al., 2016).

2.3.2 Patient Characteristics and Psychosocial Problems

Multiple factors are believed to correlate to increased post-traumatic psychosocial reactions. These factors are either patient specific (sociodemographic) or injury specific factors. Some studies that assessed socio-demographic variables to correlate with psychological problems implicated female sex, low educational level (Herrera-Escobar et al., 2018; Jayasinghe et al., 2014), financial vulnerability (Garg, Chauhan, & Sabreen, 2018; Herrera-Escobar et al., 2018; Idrees et al., 2017; Jayasinghe et al., 2014) to positively correlate psychological sequelae after injuries. Some studies have also reported the importance of age in the development of negative psychosocial sequelae with individuals between the ages of 30 and 49 identified to have the highest risks (Ahl et al., 2017).

In their study, Ahl and associates performed a stepwise multivariable analysis of injury specific variables with the psychological outcome of trauma. The results identified that risk of psychosocial problems in trauma patient is higher with low Glasgow Coma Scale (GCS) longer hospital stay (admissions beyond one month). Additionally, the study stated that the depressed subgroup required longer hospital stay and most often required most intensive care admissions (Ahl et al., 2017). These findings are supported by Sullivan and associates (2017) who also found correlations between prolonged length of hospital stay and psychosocial problems in traumatic patients.

Some studies have opined that, being admitted to the hospital may be a determinant in the development of psychosocial problems. For instance, Gopinath and colleagues (2015) conducted

a propective cohort study to determine if there were variations in health outcomes in hospitalized respondents with RTA injuries compared with non-hospitalized respondents. Three hundred and sixty four (364) RTA adult victims were recruited at baseline and at twelve months (n = 284) and at two years (n = 252) in Australia. Inclusion for hospitalized group included at least 24 hours on admission after RTA whilst those admitted for less than twenty four hours were classified as non-hospitalized. The study findings indicated that, at baseline and twelve months (one year), hospitalized patients exhibited worse psychosocial outcomes compared to the non-hospialised group when age and sex were controlled. A further control for level of education, fracture, injury severity score and whiplash injury resulted in a persisitent worse experince of psychosocial problems. However, these differneces did not exist after 24 months. This is coroborated by the study of Kendrick et al. (2017) as they posited that, injuries that require admissions to the hospital can cause anxiety and depresion, which can consequently cause a considerable and clinically significant reduction in health related quality of life up to one year. This notwithsatnding, the findings from the above studies also suggest that, the association between long term health effects and hospitalization cannot be sunstantiated.

Inferentially, Gopinath and collleagues' (2015) work is suggestive that, psychosocial symptoms following injuries are not consistent over time. From their study, severe psychological symptoms that were present in hospitalized patients minimized to the level of experience in the non-hospitalized patients, who had better psychological wellbeing from baseline to twelve months. Further support to this claim is provided by the findings of another cohort study from three European coutries (Italy, Greece, and Germany). The researchers invited all RTA patients admitted to admitted to Intensive Care Units (Warren et al.) or sub-ICUs of some designated hospitals to partake in the study from 2013 to 2014 at different time points: at one month, six months and at

one year. 120 patients were recruited in the study, and 80% partook in all three surveys. An analysis of the result indicated that, risks of depression were 79% and 88% lower at first and second follow ups respectively, compared with the baseline. There was a 72% lesser risk for PTSD at second follow up when compared with the baseline. Older age, being widowed or divorced, higher injury severity score and type of injury were major correlates of increased risk for unrelented psychological distress (Papadakaki et al., 2017). In all, the study evinced that psychological problems naturally subside in their severity with time and may be less relevent.

The forgoing has also been substantiated by a report from the longitudinal study by Wiseman and associates (2015). They averred that, anxiety symptoms tend to decrease with passing time of injury. In this study, 58.7% of the participants had a baseline anxiety with another 44.3% meeting the criteria for stress. This rate reduced to 34.4% and 36.9% respectively for anxiety and stress at three months. There was a further reduction in incident rate at six months post injury with anxiety reducing to 22% and 23.0% for stress. In a related study, Heron-Delaney and colleagues (2013) investigated the incidence rates of PTSD among adults involved in RTA by post injury time. The results indicated that, the incidence rates were between 8 – 45%, 8 – 30%, 6 – 28% and 7 – 26% at one, three, six, and twelve months respectively. The variations in incidence demonstrated an overall reduction in the incidence of PTSD with passing time, which may be an indication of a natural decline of PTSD clinical manifestations with passing time. It will be inappropriate, however, to marginalize the percentage of individuals who may have residual psychiatric disorders with passing time, considering the overall effects of these problems.

This, nonetheless, does not seem to be true in all trauma cases. Some other studies have either found psychological problems to be stable over time or in some cases, get worse off. For example**,** Craig and associates (2016) posited from their systematic review that, patients with

severe injuries which result in traumatic brain injuries and spinal cord injuries tend to have heightened incidence of psychological distress which either remained stable or worsoned over time. It is however important to note that this latter study used patients with TBI and SCI. Relatedly, Ajibe et al., (2015) reported that, psychosocial problems in orthopedic trauma patients were higher in later months (at three and six months) compared to the immediate post-injury period (at one and two months). However, in this latter study, psychosocial problems were least at four and five months post-injury, suggestive of an inconsistent result from studies even in the same population.

Further, there have been reports suggesting that the site/location of an injury may have an impact on psychological adjustment and the overall qulality of life of the injured victims. Even though there are varied opinions in this regard, most reports are suggestive that, injuries to lower part of the body, particularly the lower extremities pose higher risk on psychological wellbeing. This was evident in the findings of Papadakaki et al. (2017). Lower extremity injuries have been linked with delay in return to work and a substantial reduction in overall quality of life (Sluys, Shults, & Richmond, 2016) since this occurrence can worsen the stress experience. However, there are findings from other injury groups that suggest that, upper extremity injuries are more detrimental to psychosocial health than lower extremity injuries (Cheung, Alvaro, & Colotla, 2003). In Australia, Baecher et al. (2018) explored the impacts of site of injuries and their severity on psychiatric sequele in using injured patients. One thousand and ninety eight patients were sampled during hospitalization and followed up at three months. The findings indicated that, injury severity score, injuries to the scalp and face significantly predicted elevated symptoms of PTSD. Further, the study found strong association between visible (external) injuries and severity of both PTSD deppresive symptoms. Unlike PTSD symptoms, depressive and anxiety symptoms were

related to injuries to the lower extremity. These findings suggest that, visible or physical injuries may cause severe negative psychological outcomes in the trauma patients. Portions of these findings are corroborated by Muscatelli et al. (2017) and Srahbzu, Yigizaw, Fanta, Assefa, and Tirfeneh (2018) who have identified that psychosocial problems and psychiatric symptoms are more prevalent in individuals with lower extremity injuries than those with upper extremity injuries.

In contrast to the above propositions, other studies suggest such associations are either weak or non-existent. For example, in the same work by Muscatelli et al. (2017) they identified that, between the patients with upper and lower extremity fractures, no significant variance in the experience of anxiety and depression symptoms were detected.

There is also a growing evidence indicating that, the type and severity of injury may perpetuate psychococial problems. Vu et al. (2019) reported that, in RTA patients with injuries, the type of injury as well as the location may be determinative of the psychological wellbeing of the victim. Even though there is paucity of information on comparative studies, literature suggest some trauma populations and types pose greater risk to psychosocial problems than others. For instance, penetrating injuries have been described to be highly associated with depression (Ahl et al., 2017). Other studies on maxillofacial injuries have also reported increased psychological morbidities in patients with maxillofacial injuries as well (Aashish, 2015; Nayak et al., 2019; Yadav & Shrestha, 2017). Similarly, studies on orthopedic populations indicate that, this population may have higher risk for psychosocial problems than other populations due to the comparatively high percentages of psychological morbidities reported in such studies (Ajibade et al., 2015; Srahbzu et al., 2018). Meanwhile, findings from a comparative study from Nigeria (Braimah, Ukpong, Ndukwe, & Akinyoola, 2017) suggest that, patients with maxillofacial injuries

may manifest severe and prolonged symptoms of psychological problems than patients with long bone fractures.

The claim on injury severity has however been found to be weak and that, such associations may be inconsistent over time. For instance, in the study conducted by Boals and colleagues (2017), they concluded that, injury severity score (ISS) did not significantly predict PTSD in their study. In this study, the reserchers examined ISS for physical injuries in 460 respondents at a level one trauma center and its effects on psychoscial problems at baseline, three months, six months and at twelve months. The findings indicated associations between the variables from baseline to six months. However, the study found that, at 12 months, ISS did not relate to PTSD and the effect sizes of the relationships with the other variables were small, which were likely to be rendered non-significant in the presence of multiple comparisons (Boals et al., 2017). Like the findings from this research, Roden-Foreman et al. (2018) have also argued that, injury related factors including cause of injury, type of injury, severity of injury and even hospital stay are not related with the development of psychological problems after injuries.

General correlates of psychosocial problems in injured population in Africa have been reported in some available studies. Whilst some findings support other findings from advanced countries, there are somewhat variations and some unique findings. For example, Ajibade and associates (2015) conducted a cross sectional study to investigate the prevalence of psychiatric morbidity among RTA victims at an orthopedic hospital in Lagos. The results revealed that psychiatric problems were common in RTA victims (up to 65.2%). Common disorders identified included PTSD, anxiety, somatization, social dysfunction and service depression. Moreover, the findings revealed that, sociodemographic variables did not demonstrate any significant association with psychiatric problems even though they seemed higher in divorced and widowed group, men,

the unemployed, those without formal education and people between the ages of 56 and 65. However, some accident variables such as post-accident time, longer stay at the hospital (above 6 months), car or vehicular accident were significantly associated with psychosocial problems. This is quite different from the findings of Yohannes and colleagues in Ethiopia as they described male gender and 1-3 months duration post-incident to be significant correlates of PTSD after RTA (Yohannes, Gebeyehu, Adera, Ayano, & Fekadu, 2018). However, both studies concur that, post-injury time and gender may be significant variables in the development of psychiatric disorders post-traumatic injuries, as has been reported in some other western studies.

2.3.3 Appraisal of Injuries and Psychosocial Problems

Stress appraisal has been reported in various studies to significant influence the psychological experience of trauma victims. It has been suggested that how an event is appraised will determine the extent to which psychological symptoms like PTSD will be experienced (Mictchell et al., 2017). In a study in Kenya, Yueng and associates (2019) explored the longitudinal depression and anxiety symptoms in adult injured patients as well as their risk factors. They followed up patients on the telephone at 2-3 and 4-7 months after discharge. The study identified that, patients that had the worse appraisal of their stressor or health had elevated symptoms of depression and anxiety. These findings are corroborated by a similar study in South Africa where Machisa, Christofides, and Jewkes (2018) postulated that, appraisal of traumatic event negatively correlated psychological problems. In this study, samples were drawn from young men and women with stress to appraise their respective stressors. The study revealed that, women exhibited symptoms of psychological problems more than males. A further analysis revealed that, women appraised all traumatic events more negatively than men and had the greatest psychiatric

symptoms, emphasizing the importance of trauma appraisal in the development of psychiatric symptoms.

Association between stress appraisal and PTSD has also been evaluated in adolescents with trauma. In one of such studies, random effects meta-analysis revealed that, PTSD symptoms become severe with concurrent severe trauma appraisal, with a cumulative effect size of $r = .63$, 95% CI (.58 - .68), $Z = 17.32$, $p < .001$ (Mitchell et al., 2017).

2.3.4 Coping Styles and Psychosocial Problems

"Coping is the process of using emotional, cognitive, and/ or behavioral strategies to manage one's stress in order to reduce its potential harmful impact on psychological adjustment" (Garg et al., 2018, p. 492). The ability to cope effectively may be an important determinant of well-being across life span. However, inability to cope or failure to use the right coping mechanism may cause further psychological distress in individuals already confronted with life stressors (Mayordomo, Viguer, Sales, Satorres, & Meléndez, 2016). In general, literature suggests that, the choice and use of coping styles can impact on the overall physical and psychological wellbeing of individuals confronted with stressful situation (Olff, 2011; Proulx & Aldwin, 2015). Various specific styles of coping are identified in literature to be used by individuals with various stressful conditions and each type has its related psychological outcome.

In one of such studies in India, Garg et al. (2018) explored the coping styles and life satisfaction in palliative care among 100 terminally ill cancer patients using observational cross sectional study with the COPE scale. The study revealed that, most patients used the religious and acceptance coping styles. The most effective coping style was identified to be the problem-focused coping. Further findings of this study indicated that, males showed more acceptance to their condition than females. However, females were identified to manifest higher problem-focused

coping style whilst the male sample demonstrated higher levels of emotion focused and avoidant coping. In evaluating the overall health and wellbeing of the sample, the study alluded that problem oriented coping strategies were positively related with better psychological wellbeing.

In an integrative review of literature on the psychosocial adjustment using burn patients, Attoe and Pounds-Cornish (2015) identified strong evidence that suggested that, psychosocial adjustment can be influenced by particular coping styles. The work examined various studies from high income countries like the USA, Germany, Sweden, Australia and China. Studies were selected based on robust appraisals on methodology. The researchers included longitudinal studies that were successfully completed and results of original studies. They found that, in most studies reviewed, the choice of coping had significant correlation with psychosocial wellbeing. A further critical evaluation revealed that, avoidant coping was particularly associated with negative psychosocial adjustment where as active or acceptance coping was associated with positive outcomes (Attoe & Pounds-Cornish, 2015).

In a related work, 178 patients with burns were recruited into a prospective study in Holland to identify how they coped with their injuries. The study further examined the role played by coping in recovery from PTSD post-injury. Avoidant coping style was found to correlate negatively with levels of PTSD at the hospital whilst emotion-focused coping showed no correlation with PTSD symptoms. Ironically, avoidant coping was not found to influence recovery whilst emotion focused coping had significant impact on recovery from PTSD. In all, the participants used more of active coping styles ($M = 2.64 \pm .63$) than emotion focused ($M = 1.78, \pm .70$) and avoidant ($M = 1.79, \pm .53$) coping styles (Bosmans et al., 2015). Thus, the slightest utilization of avoidant coping may play more role in the development psychological problems than

the other types of coping styles, whilst the use of emotion-focused coping may help in mitigating psychological morbidities.

The forgoing findings are similar to the findings from LMIC studies. Some available studies corroborate those from high income countries suggesting that coping and psychological adjustment may be a universal phenomenon. For instance, Noor et al. (2016) have reported from Pakistan that, positive coping strategies and problem focused coping were positively correlated with psychological wellbeing. They however indicated that, avoidant coping showed a negative relationship with psychological adjustment. The study further revealed that, positive coping strategies and problem focused coping significantly and positively predicted psychological adjustment whilst active avoidant coping strategy negatively predicted psychological adjustment. Meanwhile, a Tanzanian study seem to suggest that, adaptive coping styles such as problem focused and active emotion may not necessarily predict psychological wellbeing. In this study, most participants were found to have utilized adaptive coping strategies over maladaptive strategies, yet, the rates of depressive symptoms were very high (61%) (Obayemi et al., 2020).

2.3.5 Social Support and Psychosocial Problems

While acknowledging the role of appraisal and coping strategies in the development psychosocial problems, other important variables may as well contribute immensely to the relationship that exist between those variables. For instance, Kim (2013) has opined that, an individual ability to cope with stress may be influence by availability of social support. Conversely, a lack of social support may lead to a feeling of dejection, hopelessness, social seclusion and helplessness. This seem to suggest that, social support could be a predictor of psychological wellbeing. Social support may refer to the state of belonging to a social network of other individuals or group of individuals who show concern and usually ready to help during

negative life events (Machisa et al., 2018). It could be conceptualized in different ways, such as "information leading an individual to believe that he is cared for and loved; esteemed and valued; and belongs to a network of commination and mutual obligation" (Cobb, 1976, p. 300). It can also be in the form of receiving material or tangible assistance such as money or physical help in the performance of activities from the network. Social support is usually received from close relatives, friends and other significant others (Jalali-Farahani et al., 2018; Scheid & Wright, 2017). Perceived social support, which is sometimes referred to as "emotional support" is the perception that such a network is available and people with a stressor can turn to when necessary. The influence of social support (either perceived or actual) on psychological health has widely been studied in victims of abuse and violence, psychological problems as well as other traumatic events. Usually, these events are perceived to be stressful and individuals who perceive or receive adequate support demonstrate effective coping and maintain or regain relatively healthy psychological states (Gariepy, Honkaniemi, & Quesnel-Vallee, 2016; Machisa et al., 2018; I. Mitchell, Evans, Rees, & Hardy, 2014; Yohannes et al., 2018).

Social support is therefore very key in the psychological adjustment of the injured victim. Extant literature suggest that, social support has negative correlation with psychological problems of various trauma victims. For example, Ning and associates (2017) investigated how social support may affect trauma outcomes, basically PTSD after RTA in an emergency department in Yarqi, China. The study findings indicated significant association between PTSD scores and objective support, subjective support and social support. The results indicated significant negative relationship with respective correlation coefficient of -.27, -.30, and -.30. That is, the development of PTSD and other psychosocial problems may be upsurge by poor social support (Ning, Guan, &

Liu, 2017) since such victims are likely to adapt negative appraisals and maladaptive coping strategies (Cao, Qi, Cai, & Han, 2018).

The results of a path analysis among coping, perceived stress, personality, social support and psychosocial problems in 4, 763 individuals indicated that, problem-focused coping was the most utilized coping style (M = 9.65 ± 2.12 versus 6.44 ± 1.49 for emotion-focused coping and 3.41 ± 1.76 for avoidant coping). Correlational analysis indicated that, low social support was significantly related with increased depression (r = -.39) and anxiety (r = -.33) symptoms. The study findings further indicated that, emotion-focused and problem-focused coping both showed significant negative correlation with depression and anxiety. Unlike previous studies, this study detected no significant relationship between avoidant coping and psychosocial outcomes (Roohafza et al., 2016). The findings from the pathway analysis indicated that, perception of stress directly and positively affected depression (.28) and anxiety (.33) whilst social support (-.09) and coping styles (-.08) negatively affected depression. There was also a direct negative effect of social support and coping on anxiety. These findings elucidate the significant role played by social network and coping in the psychopathology of individuals with stress (Roohafza et al., 2016).

The report from a systematic literature review on associations between loneliness and PSS on development of psychosocial problems supports the preceding identified effects of social support on psychological wellbeing. The reviewers concluded that, perceived social support is a principal determinant of psychological problems including depression, anxiety, panic disorder and other bipolar disorders. In support of this supposition, they further indicated that, in patients with mental health problems, perceived social supportive could predict symptom severity at subsequent points in time as well as remission rates. For instance, in patients with anxiety, the result of one study indicated that, low levels of PSS predicted severe anxiety (β = -0.15, CI [-0.30 – 0.06]) as

well as depressive symptoms (β = -0.16, CI [-0.28 - 0.08]), with respective ratios of 8.85 and 10.51% subsequently at different times (Wang, Mann, Lloyd-Evans, Ma, & Johnson, 2018).

In a related work, Tough and associates (2017) reviewed diverse empirical studies on associations that social relations have on psychological health and wellbeing. Fifty eight studies that focused on social support were included, with which 45 were cross-sectional with thirteen longitudinal studies from various high income and LMICs. Mean sample size was found to be 232.5 (range = 50 - 1455) with a mean age of 52.1 (range = 21-75). Common health conditions identified in the sampled research works included rheumatoid arthritis, multiple sclerosis, stroke, spinal cord injury and other non-specific physical disabilities. The results of the review showed that, thirty three of the forty five cross-sectional studies reported significant associations between social support and psychological wellbeing. Further report from the review indicated that, 14/25 studies that studied depression found negative correlation between depression and social support. There were also negative correlations between social support and PTSD in 1/3 studies that examined PTSD. There were however positive relations between well-being and social support in 8/14 studies on wellbeing. On longitudinal studies, some studies reported that, during the acute and initial stages of the stressful situation, there were increment in social support levels over time but declined at a later stage. Some studies however found only cross-sectional relationships. This seem to suggest that, in prolonged stress, friends, family members may not be readily available to provide such a support as they may do during the acute phase of the stress (Tough, Siegrist, & Fekete, 2017).

Social support has been linked with resilience and effective coping in extant literature. It is thus seen to demonstrate some moderating effects on the relationship between coping and psychosocial problems. Moderator variable is used to refer to a variable that is capable of changing

the size or direction of a relationship between a predictor and an outcome variable (Holmbeck, 1997). When evaluated theoretically, it means that, the effect of the independent or predictor variable on the dependent or outcome variable is dependent on the worth of a third variable (i.e the moderator) (Hayes & Matthes, 2009). This effects can be enhancing, buffering or antagonistic. The interaction effect of social support and coping on psychosocial wellbeing has been studied in some population and has demonstrated positive outcome. For instance, Machisa et al (2015) have posited that, women with domestic trauma who perceive their communities to be supportive develop high resilience. Dodd, Driver, Warren, Riggs, and Clark (2015) also found that, patients with spinal cord injuries who had higher levels of attachment avoidance had lower perceived social support, which ultimately related to lower perceived resilience and coping. Relatedly, a study of women with burns using a 31 item social support scale (SSS) to measure family support and PSS in Pakistan showed that, social support intensely influenced how patients coped with their conditions. The study further revealed that, social support was higher in the less educated patient, with the collectivist culture implicated in this finding (Idrees et al., 2017). This phenomenon, according to Jalali-Farahani et al. (2018) can have significant direct positive relationship with mental health related quality of life.

The above-mentioned evidence imply that, if victims of RTA with physical injuries receive adequate social support or have positive perceived social support, the psychological consequences of the injuries will be minimized. It will positively impact on their coping styles or mechanism and subsequently improve their overall quality of life.

2.4 Summary and Analysis of Literature Review

Extant literature reviewed so far indicate that, psychosocial problems are common among patients with traumatic injuries. Among the causes of injuries identified, RTA related injuries are the major cause of concerns, and vehicular injuries are by far the most common type of RTA injuries. In both high income and LMICs, males and youth are the highest risk group involved in RTA and its related injuries.

Among factors that are related with psychosocial factors, several factors were identified including demographic variables (sex, age, marital status, employment status, level of education) and injury characterizes (type of injury, location/site of injury and post-injury duration). For instance, orthopedic related injuries were identified to cause most psychosocial problems (Ajibade et al., 2015). Hospitalization was also identified to influence the level of psychological distress and other mental morbidities associated with traumatic injuries. In general, hospitalized patients tend to develop frequent and severe psychosocial problems than non-hospitalized or out-patient (e.g Ahl et al., 2017; Gopinath et al., 2015).

Additionally, other personal and social variables such as appraisals, coping styles and social support have widely been implicated in the development and level of psychological problems. Negative form of appraisal such as appraisal of threat, centrality and uncontrollability have been linked with poor psychological outcome whilst appraisal of challenge and controllability were linked with good psychological health. Some studies also reported on the relationship between psychosocial problems and coping. The choice of coping style were found to significantly influence the development of psychological problems, and notably, avoidant coping was largely associated with poor health outcomes.

However, social support and patients choice of adaptive coping mechanisms have significant positive influence on maintaining good psychosocial health, as victims who focus on their problems (problem focused coping) and plan toward solving the said problems generally develop good psychological health as against those who try to avoid their problems. Notably, perceived social support was identified to influence how patients coped with their stressors. Perception of available social support in general was found to promote good psychological health.

2.5 Hypothesized Model

The figure (2.2) below describes the conceptual framework for the study. The model is suggestive that there will be relationship between patient's background characteristics (sociodemographic variables, injury characteristics [type, location and duration] and patient status [hospitalized or non-hospitalized); Injury appraisals (primary appraisals [threat, centrality and challenge], Secondary appraisal [Controllable or uncontrollable], total perceived stressfulness); Coping styles (Avoidant coping, task oriented coping and emotion focused coping); and psychosocial outcomes (psychosocial distress and PTSD). It also suggests that, with adequate social support, patients will adopt effective coping styles which can subsequently promote good psychosocial health.

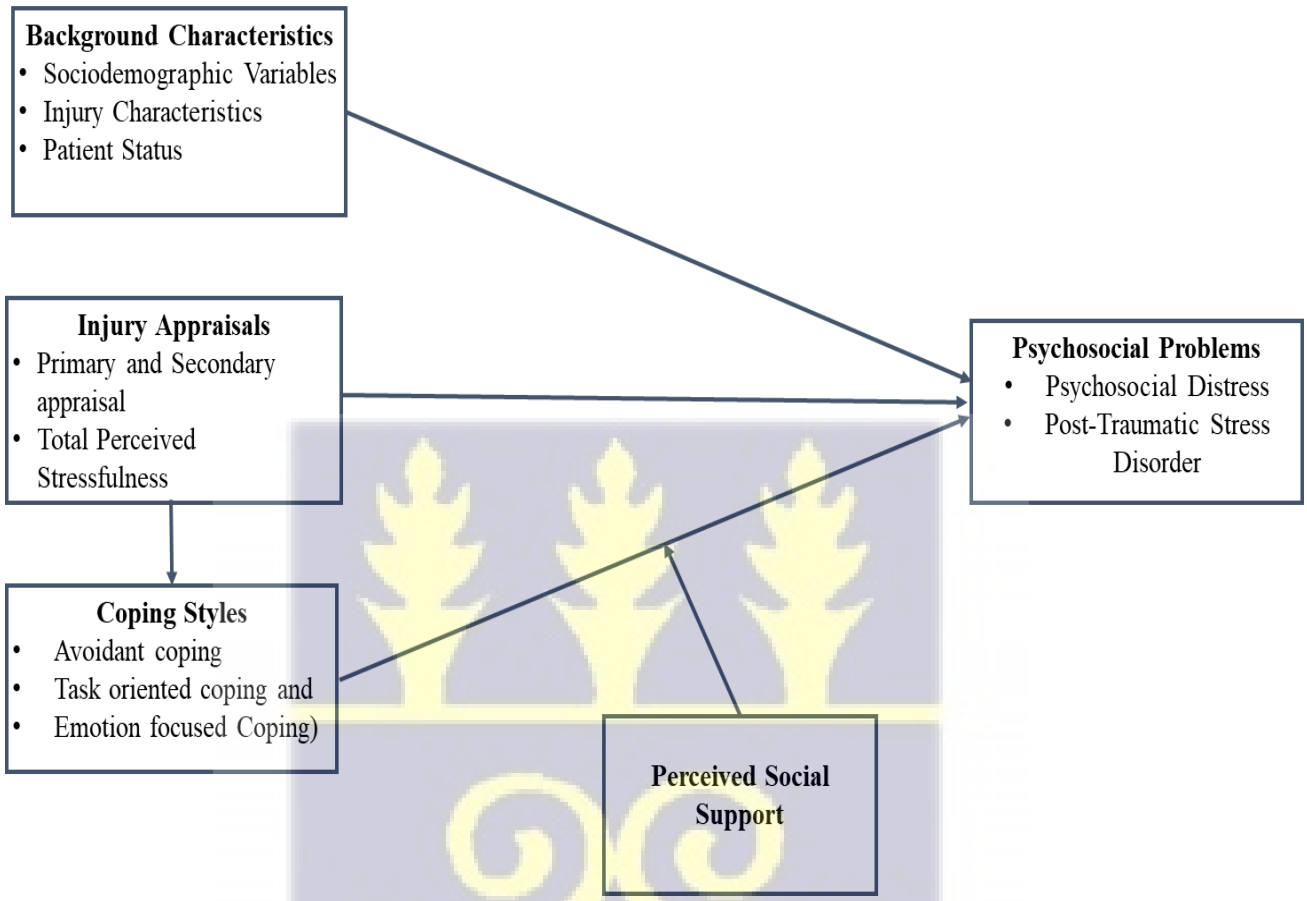

Figure 2.2: Conceptual Framework

2.6 Gaps Identified in Literature and Justification for the Current Study

1. Most studies were done in the high income countries and other LMICs outside Africa, although the incidence of RTA in Africa are very high.
2. Almost all the studies both in high income countries and LMICs used trauma populations with TBI, SCI or orthopedic injuries. No study used patients with only skin or muscle or soft tissue injuries (i.e., non-involvement of skeletal system and nervous system).
3. Most studies used only in-patients (hospitalized patients), with few studies using non-hospitalized population. No study was done using both populations at the same time.

4. Again, within LMICs and mostly in Africa, only one study tried to evaluate appraisal, coping and social support and how they impact psychological health in the RTA patient with physical injury. However, culture may influence appraisal and coping and the findings from other cultures may not be applicable in the Ghanaian setting.
5. The prevalence of psychosocial problems were mostly inconsistent among the studies, including even studies conducted in the same country.
6. With the important role played by stress appraisals, coping mechanisms and PSS in the development of psychosocial problems, studies assessing psychosocial problems in injured patients rarely examined these important constructs. Most available studies on PSS, coping and appraisals were found in studies conducted on patients with burns, cancer and other chronic medical conditions.

Therefore, the current study seeks to establish the psychosocial problems in victims of RTA with physical injuries, with critical consideration of appraisals, coping styles and social support since literature on this field is woefully inadequate and inconsistent in Africa, especially in Ghana. Since the study is the first of its kind in Ghana using the current population, it will provide vital information on the study variables in the Ghanaian context and culture.

2.7 Study Hypotheses:

Hypothesis 1: there will be significant association between:

a. sociodemographic characteristics (age, sex, level of education, marital status, ethnic background, employment status) and psychosocial outcomes of respondents.
b. injury characteristics (type, location, duration) and psychosocial outcomes of respondents

Hypothesis 2: there will be significant difference in psychosocial outcomes of respondents:

a. across the various categories of demographic variables

b. across the various injury characteristics of respondents

c. between hospitalized (in-patients) and non-hospitalized (out-patients)

- hospitalized patients will demonstrate higher levels/incidence of psychosocial problems than non-hospitalized patients.

Hypothesis 3a: injury (stress) appraisal will significantly relate to coping styles of respondents.

3b. injury appraisal, coping styles and PSS will significantly relate to psychosocial outcome of RTA injuries.

Hypothesis 4: PSS will moderate the relationship between coping styles and psychosocial outcome of victims of RTA with traumatic injuries.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This section of the study provides information on the research design and techniques employed in the study. It further highlights the setting of the research, study population, inclusion and exclusion criteria, determination of sample size and sampling technique employed for the study. Instruments used for data collection including their validity and reliability, data collection procedures, data management processes and ethical considerations are as well described in this chapter.

3.1 Study Design

The study employed a cross sectional survey. Cross sectional studies capture information about a particular population in a single point in time (Creswell, 2014). This method was considered the most suitable since the study was aimed at obtaining a wider picture of the psychosocial problems encountered by RTA victims with traumatic injuries. Moreover, cross sectional design was chosen since it was the best and most appropriate design to measure the prevalence of psychosocial problems whilst measuring the attributes of the psychosocial outcomes in the study population (Parahoo, 2014; Polit & Beck, 2010). It enabled the researcher to take a snapshot of the study population and to gain more insight into the psychosocial problems of the target population in a more economical way within a relatively short period. It is however important to state that, timing of cross sectional studies may not guarantee full representation of a population and cannot establish a causal effect of a particular phenomenon (Creswell, 2014; Sedgwick, 2014).

3.2 Study Setting

The study was conducted in the Kumasi metropolis, the Ashanti regional capital. Kumasi is the second largest city in Ghana after Accra. It is a cosmopolitan community with diverse cultural and socio-economic activities strategically located in the middle part of the country. Currently, there are six sub-metropolitan districts (Bantama, Suame, Subin, Nyhiaeso, Manhyia North and Manhyia South) in the Kumasi metropolis, with an estimated total population of 1,468,609 (United Nations Department of Economics and Social Affairs, 2019). Demographically, the population of Kumasi represents 36.2% of the total population of the Ashanti region with majority being females (52.2%) (Ghana Statistical Services [GSS], 2014). Even though Kumasi is a cosmopolitan town, majority of the populace are from the Akan ethnic group (85%), and majority are Christians. Economically, more than sixty five percent of the populace are employed, with majority engaged in trading and transportation (GSS, 2014). Mini buses, popularly called "trotro"; taxis and recently, tricycles, popularly called "Pragya" and "Aboboyaa" are the major means of transportation for vast majority of the populace. These vehicles and motor cycles are almost exclusively operated by males, mostly in their youthful ages. In spite of the pedigree and busy nature of Kumasi, most of the intra-city road networks remain untarred; and majority of the few tarred ones are very narrow with no pavements, with many others developing potholes. These factors, coupled with carelessness of some drivers, street and highway hawking and other known human factors contributing to road accidents make Kumasi an accident prone city (Acheampong, 2020; Cobbinah, Gaisie, Oppong-Yeboah, & Anim, 2020; Gyimah, 2020), and consequently makes Kumasi an ideal location for the current study. The city has one teaching hospital and a lot of notable public, quasi and private health facilities that provide health care to the populace.

3.2.1 Study Sites

The study sites included the only teaching hospital in the metropolis (Komfo Anokye Teaching Hospital [KATH]), Tafo Government Hospital and the Manhyia District Hospital.

KATH is a 1200 bed capacity hospital that serves as the major referral center for the whole of the middle belt of Ghana (Ashanti, Ahafo, Bono, Bono East, Western North and some parts of the Eastern, Central, Northern and Western regions). The hospital has various departments and directorates that provide specialized care to all type of patients. Three directorates were used for the study, including the Orthopedic and Trauma, the Emergency Medicine and the Family Medicine directorates. The emergency medicine directorate is a 111 bed capacity ultramodern accident and emergency center that receives most RTA victims from these parts of the country as well as other West African countries. On the average, the emergency center receives approximately 2300 cases of trauma in a year, and up to 77% of these cases are RTA related. The trauma and orthopedic directorate has a hundred and forty eight bed capacity for ward service, and a plaster room at the Accident and emergency center of KATH. It is a moderately well-equipped level 1 trauma and orthopedic management center with four operating rooms. The family medicine directorate (formerly called Polyclinic) is the first point of call for most non-emergent cases at KATH. It provides 24 hour general and specialized primary care services to all patients of all age group, mostly on outpatient basis. Hospitalized patients were recruited from the Emergency medicine directorate and the adult orthopedic wards whilst the plaster room and wound dressing unit the family medicine directorate were used to recruit out-patients, at KATH.

The other two sites were the Manhyia District Hospital and Tafo Government Hospitals. These two hospitals are located in suburbs of the metropolis (Manhyia and Tafo respectively) that dominate in the use of “Pragya” and ‘Aboboyaa” in the metropolis. Both hospitals provide 24 hour

services in general and other specialized care. Each has an emergency center that manages accident victims with injuries mostly on outpatient basis. Tafo Government hospital has 59 bed capacity whilst Manhyia district hospital has 121 bed capacity. Participants from these hospitals were recruited at the respective wound dressing units where patient with RTA injuries dress their wounds on outpatient basis.

3.3 Target population

The population of the study involved patients (in and out patient) who were involved in road traffic accident in the Kumasi Metropolis. The target population were adult (18 years and above) RTA victims with injury who were receiving care at the selected study sites either as in patients (hospitalized) or out patients (non-hospitalized) during the study period (March, 2020 – July, 2020).

3.4 Inclusion and Exclusion Criteria

3.4.1: Inclusion Criteria

a. **Hospitalized patients**: For patients who were on admission at the hospital during the period for the study, inclusion for the study included:

    1. having been admitted for at least twenty four (24) hours due to an injury from RTA before recruitment process.
    2. having evidence of an injury (wound and/or fracture) from RTA
    3. being 18 years of age and above
    4. being a Ghanaian (to ensure the data is specific to the Ghanaian culture)
    5. those who showed willingness to partake in the study, including giving of consent.

b. **Non-hospitalized patients**: For patients not on admission during the survey, inclusion included:

    1. meeting criteria 2-5 in (a) above
    2. having been treated at an orthodox hospital for RTA related injury.

3.4.2 Exclusion Criteria

1. RTA patients who had traumatic brain injury (TBI).
2. RTA patients who had spinal cord injury (SCI).
3. Unconscious patients.
4. Patients with pre-existing, diagnosed psychiatric problems before the RTA.
5. Patients diagnosed with psychiatric problems after the incident.

3.5 Sample Size Determination

The sample used for this study was 425. This number was calculated using the Kish and Leslie method since the researcher had no knowledge on the variability of the study population coupled with non-availability of a previous sample for a similar study at the study sites (Israel, 1992; Kish, 1965). With 95% confidence interval and a 5% margin of error, the sample size was calculated as:

$n = Z^2 (p*q)/d^2$, where:

n = sample size

Z = confidence level of 1.96 at 95%

p = estimated prevalence of 50% (.5)

q = (1-p) = (1-.5) = .5

d = error margin = .05

n = 384.16

To cover for non-respondents and incomplete data, 10% of the calculated sample size was added giving an approximate sample size of 423, which was rounded up to 425.

3.6 Sampling Technique

The convenient sampling technique was used to select prospective respondents for the study. Since the study sites involved three different facilities, non-proportionate quota sampling method was initially used to determine the number of respondents in each facility. However, with the outbreak of the novel COVID-19 pandemic, and limitation imposed on movement of persons and vehicles in the Greater Kumasi metropolis (Ministry of Interior, March 28, 2020), patient census reduced drastically in these facilities, especially accident victims at KATH (Ghana News Agency, September 29, 2020). For this reason, all patients that presented at the study sites and met the inclusion criteria during the period of data collection were included in the study until the sample size was reached (Alvi, 2016; Barreiro & Albandoz, 2001; Parahoo, 2014).

3.6 Background Characteristics of Respondents

The table (2) below summarizes the background characteristics of the respondents. Four hundred and twenty three (423) participants responded to the study questionnaire out of the 425 recruited for the study. This represented 99.5% response rate. Out of this, a total of three hundred and eighty two (382) questionnaires were fully complete and included in the analysis. On demographic characteristics, 257 (63.3%) of the respondents were males and 125 (32.7%) females. The mean age of respondents was 36.80 years (*SD* = 11.53). On educational background, 157 (41.1%) had attained Junior high school education with 99 (25.9%) and 38 (9.9%) attaining a

secondary and tertiary education respectively. Respondents were either Christians (69.9%, *n* = 267) or Muslims (31.1%, *n* = 115). Most of the respondents were Akans (56.3%).

In reference to the clinical/injury characteristics of respondents, 275 (72%) were hospitalized and 107 (28%) were non-hospitalized patients. Two hundred and nine respondents representing 54.7% were involved in vehicular accidents and 116(30.4) were involved motorbicycle accidents. With respect to location of injuries, 49.5% (*n*=189) had injuries to the lower limbs and 26.7% (*n* =102) sustained injuries to the upper limbs. 44% (*n* = 168) had closed fracture and 27.5% (*n* =105) had sustained abrasions and/or lacerations. More than half of the respondents (53.7%) had injury duration of less than one month.

Table 3.1: Summary of Background Characteristics of study Respondents

Variable	Category	Frequency (N=382)	Percentage (%)
a. Demographic data			
Gender	Males	257	63.3
	Females	125	32.7
Age Range	18 – 25	72	18.8
	26 – 39	165	43.2
	40 – 60	134	35.1
	Above 61	11	2.9
Mean Age (*SD*)	36.80 (11.53)		
Level of Education	None	24	6.3
	Primary	64	16.8
	Junior High (JHS)	157	41.1
	Senior High (SHS)	99	25.9
	Tertiary	38	9.9
Religion	Christian	267	69.9
	Muslim	115	30.1
Marital Status	Single	114	29.8
	Married	214	56.0
	Divorced	18	4.7
	Widowed	14	3.7
	Co-habiting	22	5.8
Ethnicity	Akan	215	56.3
	Northerner	134	35.1
	Ga/Dangme	8	2.1
	Ewe	12	3.1
	Others	13	3.4
Occupation	Civil Servant	50	13.1
	Self Employed	199	52.1
	Farmer	83	21.7
	Unemployed	26	6.8
	Student	17	4.5
	Others	7	1.8

b. Clinical Characteristics			
Type of Patient	Hospitalized	275	72
	Non-hospitalized	107	28
Type of RTA	Vehicle	209	54.7
	Motorbicycle	116	30.4
	Bicycle	4	1.0
	Tricycle	53	13.9
Type of Victim	Driver/Rider	129	33.8
	Passenger	147	38.5
	Pedestrian	106	27.7
Location of Injury	Head and Face	40	10.5
	Upper Limbs	102	26.7
	Trunk	28	7.3
	Pelvis	13	3.4
	Lower limbs	189	49.5
	Multiple Sites	10	2.6
Type of Injury	Abrasions/Lacerations	105	27.5
	Blunt Tissue Injury	10	2.6
	Closed Fracture	168	44.0
	Compound Fracture/ Fracture with Lacerations	87	22.8
	Near Amputation /Amputation	3	.8
	Dislocation	9	2.4
Duration of Injury	Less than one Month	205	53.7
	1 – 3 months	122	31.9
	4 – 6 months	44	11.5
	Beyond 6 months	11	2.9

3.7 Data Collection tools /Measurement instrument

The study utilized five (5) validated scales, which include: The Stress Appraisal Measure for measuring appraisal, Coping Inventory for Stressful Events for coping styles, Multidimensional Scale for Perceived Social Support for social support, General Health Questionnaire for Psychosocial distress (anxiety, social dysfunction and lack of confidence) and the Primary Care PTSD screen for PTSD. Participants' background data including Demographic information (gender, age, educational background, marital status, religion, ethnic background and employment status) and injury/clinical characteristics (type of RTA, type of victim, type of injury, location of injury, post injury/incident duration) as well as status of participant (hospitalized or non-hospitalized) were also collected.

3.7.1 Stress Appraisal Measure (SAM) (Peacock & Wong, 1990)

The Stress Appraisal Measure (SAM) is a self-reporting scale used to measure how a person assesses a particular stressful situation. It contains variables for measuring primary and secondary stress appraisal and overall perceived stressfulness (Peacock & Wong, 1990). It has 28 items rated on a 5-point Likert scale ranging from 1 ("not at all") to 5 ("extremely"). It has 7 subscales intended to measure threat, challenge and centrality (primary appraisal) and then controlled-by-self, controlled –by-others and uncontrollable-by-anyone (secondary appraisal). The seventh subscale measures general perceived stressfulness. "Threat appraisals" relates to the probability of an imminent harm/loss and "challenge" appraisals mirror an expectation of a growth or gain from the stress. "Centrality" relates to the perceived importance of an event for the individual's wellbeing, and it is "assumed to be orthogonal to both threat and challenge" (Peacock & Wong, 1990, p. 228). The secondary appraisal measures evaluate the individual's perception of control over the stress, and are believed to be associated with different forms of coping. In the

original study of the scale, good internal consistencies were obtained, ranging from .51 to .90 for the seven subscales in three different studies (Peacock & Wong, 1990). It has demonstrated good psychometric properties with good Cronbach's alpha across studies. A Cronbach's alpha of .78 was reported for this study, with alpha of the subscales ranging from .65 to .84.

3.7.2. Coping Inventory for Stressful Situations- short form (CISS-21) (Endler & Parker, 1990; Schwarzer & Schwarzer, 1996; Cohan et al., 2006)

The CISS-21 is a validated tool that is used to evaluate three common forms of coping. The tool is useful in determining the specific coping style of an individual and promotes a clearer comprehension of the relations that exist between an individual's coping styles and his psychological wellbeing. There are various forms of the CISS used in either adolescent or adult populations, with the original scale consisting of 48 items. CISS–21 is a short form of the scale with three subscales that measure three coping styles: avoidant coping (AC), emotion-focused coping (EFC) and task-oriented coping (TOC). Each subscale is measured with seven items, in a 5 point Likert format from "not at all" (1) to "very much" (2). TOC is linked with greater happiness and involves considering a stressful event as problem to be solved. EFC focuses on vindicating emotional stress whilst avoidant coping focuses on the postponement of dealing with the current problem. Both EFC and AC are usually related to unhealthy psychological phenomenon (Howlett et al., 2015; McWilliams, Cox, & Enns, 2003). Items on the TOC include items 2, 6, 8, 11, 13, 16 and 19. EFC is measured with items 3, 5, 10, 12, 14, 17, and 20 whilst items 1, 4, 7, 9. 15, 18 and 21 measure AC. Items on the individual subscales are summed up and the mean of the various subscales is used to determine the most frequent coping style used. Examples of items on the scale include: "work to understand the situation" (TOC); "feel anxious about not being able to cope" (EFC) and "take time off and get away from the situation" (AC).

The scale has demonstrated to be valid and reliable across studies. Some recent authors have reported Cronbach's alpha of the subscales and total scale ranging from .76 to .89 (Nazemi, Raad, Kermanian, & Rahmani, 2015; Olabisi et al., 2020). In this study, an alpha level of .81 was reported for the total scale.

3.7.3 Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988)

The Multidimensional Scale of Perceived Social Support (MSPSS) is designed to quantitatively measure a person's belief of availability of the social support obtained from three sources: family support (FAM), friends support (FRI) and significant others support (SO). The MSPSS is a twelve item scale measured on a 7-point Likert format from "very strongly disagree" (1) to "very strongly agree" (7). Each source of social support is measured with 4 items. FAM items consist of items 3, 4, 8 and 11. Items 6, 7, 9 and 12 measure support from friends (FRI) whilst significant other support (SO) is measured with items 1, 2, 5 and 10. The items are summed to get an overall level of social support, and scores of 12-48; 49-68 and 69-84 are suggestive of low, moderate and high social support respectively (Zimet et al., 1988). Examples of items on the scale include: "I can talk to about my problems with my family" (FAM), "I can count on my friends when things go wrong" (FRI) and "There is special person in my life who cares about my feelings" (SO).

The MSPSS has good internal reliability and test-re-test reliability and has demonstrated a robust factorial validity in various locations, with studies generally reporting Cronbach's alpha from .70 to .94 in clinical samples (Aloba, Opakunle, & Ogunrinu, 2019; Dambi et al., 2018; Dambi, Tapera, Chiwaridzo, Tadyanemhandu, & Nhunzvi, 2017). In Ghana, the MSPSS has been validated in adolescent population, and showed good psychometric properties (Wilson, Yendork,

& Somhlaba, 2017). The Cronbach's alpha for this study was .90 (.84 for FRI, .89 for FAM and .93 for SO).

3.7.4 The General Health Questionnaire – 12 (Goldberg & Williams, 1988)

The General Health Questionnaire (GHQ) is a general tool that is commonly used to identify individuals that are seemingly at risk of developing psychiatric morbidities in the general population. It is also used in the general clinical settings to estimate the extent of psychological distress in non-psychiatric patients. It evaluates the respondents' present health status in reference to his or her usual state. The original questionnaire had 60 items (GHQ - 60). After the initial development, several versions have been developed and validated, including versions 30, 28, and 12. The current study used the last version (GHQ - 12), which is a 12 – item scale measured through four indexes. The scale is either scored using the "bi-modal" technique (0-0-1-1) or the Likert scoring technique (0-1-2-3) as suggested by the GHQ manual (Goldberg & Williams, 1988). In the Likert scale, zero indicates a very healthy state and 3 indicates a poor health and total score may range from 0 to 36. According Goldberg and Williams (1988), the use of the "bi-modal" scoring technique has an advantage of eliminating any response biases. For this reason, the bi-modal technique was used for this study. The scores are summed up ranging from 0 to 12, with varying threshold used as the cut off point for sensitivity and specificity.

The scale has three subscales which measure four psychosocial problems in the respondents, including anxiety and depression (items 2, 3, 4 and 5); social dysfunction (items 1, 8, 9, 10, 11 and 12) and loss of concentration/lack of confidence (items 6 and 7). Examples of items on the scale include "felt that you could not overcome your difficulties" (mixed anxiety and depression); felt that you are playing a useful role in life" (social dysfunction) and "been losing confidence in yourself" (lack of confidence). The scale is however often used to evaluate

psychological distress instead of diagnosing specific psychiatric problems like anxiety and depression. The mean GHQ score for the study population can be used as a threshold for cut off points (Goldberg, Oldehinkel & Ormel, 1998; Furuawa & Goldberg, 1999).

For research purposes, the GHQ-12 has proven to be the most reliable, quick and sensitive tool for assessing psychosocial distress. It has been used successfully in large cross-sectional studies in diverse populations and culture. It correlates very well with psychiatric disorders in primary health care settings, and has demonstrated good psychometric properties (Elovanio et al., 2020; Gnambs & Staufenbiel, 2018). The scale has been validated in various populations (including Ghana), mostly in adolescent and has proven to be reliable and valid. The reported Cronbach's alpha ranges from .75 to .91 (Adayonfo & Okoh, 2015; Darko, Björkqvist, & Österman, 2019; Glozah & Pevalin, 2017; Pérez et al., 2020; Verschuur, Maric, & Spinhoven, 2009). In this study, an alpha level of .75 was reported. A cut of point 4.29 (the mean GHQ obtained for the study population) was used to estimate prevalence of psychosocial distress.

3.7.5 The Primary Care PTSD Screen for DSM-5 (PC- PTSD-5) (Prins et al., 2003)

The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) was developed to evaluate chances of PTSD in respondents who have been exposed to a possible traumatic event. It is usually administered at least thirty (30) days after a traumatic event (Warren et al., 2016). It commences with an item intended to determine if the respondent has had an exposure to a traumatic event. Only patients who respond "yes" are assessed with the tool. It is a 5-item tool that elicits a "yes" or "no" response for each item on how the traumatic event has affected him or her in the past month. In this study, the first question was omitted since all prospective respondents were RTA survivors. Preliminary results from studies that sought to validate the tool suggested a "cut-off" point of 3 as "optimally sensitive" for possible PTSD (that is if a respondent responds yes to any

three questions). A "cut-off" point of 4 is considered "optimally efficient" for possible PTSD as this balances a false negative and a false positive results (Prins et al., 2015; Prins et al., 2016).

3.8 Pre-testing of Questionnaire

The final instrument for the data collection was pre-tested at the Holy Family Hospital, Techiman in the Bono East region. This was essential to ensure that the questionnaire was reliable and as such, will produce valid results before being used for the main work. After securing ethic approval from the ethic review board of the GHS, an introductory letter from the school of Nursing and Midwifery (University of Ghana) was sent to the Medical Director of the pre-test site with a copy of the ethic approval letter. The study questionnaire was administered to thirty two (32) patients with RTA injuries who were conveniently sampled. Informed consent was sought from participants before administering the questionnaires. A major fallout from the pilot study indicated that, most items were left unanswered in out-patient participants who took the questionnaires home. A subscale under the SAM and PTSD scale had poor Cronbach's alpha. These issues were addressed by training research assistants to go through questionnaires with participants whilst returning them so as to guide them to complete sections they left, upon their consent. Some words of the scales that performed poorly in the pre-test were modified and re-tested during the actual data collection process. Research assistants were also encouraged to assist respondents in case they needed any explanation on the scales before answering them. The Cronbach's alpha for the various scales for the pre-test are summarized in the table below.

Table 3.2: Validity of the Selected Scales from pre-test study of 32 Participants

Scale	***M***	***SD***	**Alpha**
Stress Appraisal Measure (SAM): Total (Total)			.79
Threat	12.47	3.72	.72
Challenge	9.63	2.03	.45
Centrality	13.03	3.27	.69
Controlled by Others	10.22	3.72	.87
Controlled by Self	13.38	3.64	.88
Uncontrollable by Anyone	7.09	3.04	.87
General Perceived Stressfulness	9.63	3.18	.76
Coping Inventory for Stressful Situation (CISS): Total			.69
Emotion Focused Coping	17.50	3.93	.69
Task Oriented Coping	19.63	5.22	.77
Avoidant Coping	12.69	4.19	.78
General Health Questionnaire (GHQ): Total	**(.91)**	**(1.16)**	**.76**
Post-Traumatic Stress Disorder	1.34	1.23	.44
Multidimensional Scale of Perceived Social Support (MSPSS) (Total)	(58.40)	**(10.77)**	**(.86)**
Family	23.19	3.93	.82
Friends	15.78	5.23	.89
Special Person	19.44	5.68	.93

3.9 Data Collection Procedure

Necessary ethic approvals were obtained from the appropriate institutions / boards before commencing the study. For the data collection process at the GHS facilities (Tafo and Manhyia Government Hospitals), an introductory letter from the Mental Health Department of the School of Nursing and Midwifery (UG) was obtained and sent to the Regional Health Directorate, together with a permission letter and a copy of the ethic approval letter. An approval letter was then obtained from the Regional Director of Health Services granting permission to the study sites. At the respective study sites, a further approval was obtained from the Medical Directors and the Deputy Directors of Nursing Services (DDNS) before permission was granted to access the patients. Similarly, at the Komfo Anokye Teaching Hospital (KATH), a permission letter was obtained from the Institutional Review Board (IRB) to the three directorates (Family Medicine, Emergency Medicine, and Trauma and Orthopedics) where the participants were to be recruited. The heads of the various directorates then granted permission to access the patients at the various units/wards. Five research assistants were recruited and thoroughly trained to support the student (principal investigator) in the data collection process (three at KATH and one each at the other two study sites). These recruited research assistants had no prior working relationship with the principal investigator.

Before contacting respondents at the various units (at all study sites), the nurse-in-charges and other nurses on duty introduced the researcher (or his assistants) to patients who met the inclusion criteria. Respondents were then engaged individually to seek for their informed consent after reading out the participants' information sheet to them. Those who willingly consented to partake in the study were made to confirm their consent by signing /thumb printing the consent form voluntarily and were also given copies of the participant information sheet. For the data

collection process at Tafo and Manhyia Government hospitals, the printed form of study questionnaires were then administered to the participants to respond at their convenient time. Participants who wished to take the questionnaires home were allowed to do so and filled questionnaires were collected during their next visit to the unit. The questionnaires were however crosschecked for completeness and participants who needed extra explanation to respond to unfilled items were attended to accordingly.

At KATH, the study questionnaire was transported onto a data collection software (Open Data Kit [ODK]). Copies of the software with the study instrument were installed on four different iPads which were used for the data collection process. Participants who were adept in the use of the device were given the iPads to respond to the questionnaire, with the researchers at stand by to offer needed support. In both situations, the instructions and items on the questionnaire were read and explained to participants who could not read or understand English language in the local dialect (Afukaar et al.) by the researcher or his assistants or a preferred interpreter by the participant. All participants who were approached accepted to partake in the study, two did not return the questionnaires and fifty nine participants failed to respond to approximately 25% or more of the items and were thus withdrawn. Consequently, 382 completed questionnaires were included in the analysis.

3.10 Ethical and Safety Considerations

Ethic clearance was pursued at the Ethics Review Board of the Ghana Health Services (GHS), Accra and the Institutional Review Board of the Komfo Anokye Teaching Hospital (KATH-IRB), Kumasi. At KATH, a Certificate of Registration was first obtained from the Research and Development (R&D) unit before applying and obtaining ethic clearance from the KATH-IRB. An introductory letter was obtained from the School of Nursing and Midwifery and

the letters of prove of Ethic clearance were then sent to the various facilities (in the case of GHS facilities) and departments (in the case of KATH) where the data was to be collected. Further permission was sought from the managers of these units/departments/wards before contacting prospective participants.

Patients who consented to partake in the study were given general information about the study on the purpose and objectives for the study. The researcher and/or his assistants informed the participants that, the social and psychological problems they may encounter following RTA injuries were to be solicited. They were also informed that, the study posed no direct risks to their lives. Participant information sheet describing the possible benefits, potential risks, voluntary participation, and confidentiality, among others were read and explained to participants. Those that agreed were then made to sign or thumbprint a consent form provided by the researcher or his assistants voluntarily before questionnaires were administered to them.

Participants who declined to be part in the study as well as those who opted to withdraw from the study were not coerced. They were pre-informed not to write their names, in-patient number or any identifier on the questionnaire throughout the data collection process. Any identifier found on completed questionnaires was recoded to maintain privacy of participants and all completed questionnaires were assigned anonymous codes. They were also assured that, the information they would provide was only going to be used for the purpose of this research.

3.11 Data Analysis Process

Data analysis process is the systematic process of making data meaningful and to be presented in a thoughtful way. It is an integral part of the whole research process (Parahoo, 2014). The process begun with data management, which is a means of bringing out comprehensive, communicative, valid and reliable information from the data collected from respondents. The

management process started with cleaning the data comprehensively. Data collected using the software (ODK) was extracted as string variables in an excel spread sheet. It was then cleaned by checking for blanks in each column of the excel spread sheet. Participants with significant missing variables (≥ 25%) were deleted from the excel spread sheet. For the printed version of the questionnaire, all filled questionnaires were cross checked systematically for completeness and those that were improperly filled as well as those with significant missing items were withdrawn from the analysis.

The data was then coded appropriately and according to the guidelines prescribed by the respective scales used in the study in a code book before entering same manually into the computer software (Statistical Product and Service Solutions [SPSS] version 21). The string variables from the ODK were converted to numerical variables in accordance with the generated codes by the researcher before it was transported onto the SPSS. Missing items were coded as "99" whilst non-applicable items were coded as "88". One trained research assistant was made to go through the processes in both cases in different files to minimize systemic errors. The two completed files were then compared using formulas in the SPSS such as frequencies for all variables in the study and identified discrepancies were rectified before actual data analysis begun. Eleven respondents had some few missing variables on some subscales, notably challenge, centrality and significant other subscales. The arithmetic mean values of the said subscales were computed and were used to replace the respective missing values (Enders, 2010).

Descriptive statistics including means, frequencies and standard deviation were used to describe the data where applicable. Items in the subscales of the SAM, CISS-21, MSPSS and GHQ-12 were computed and weighed to obtain their mean scores and their standard deviations. The total mean scores and standard deviations of the GHQ-12, MSPSS and PTSD scales were

obtained by computing and weighing all items on the respective scales. Necessary data transformations were done to aid in analysis, especially for the background characteristics of respondents. Normality testing was done for all continuous variables as well as other assumptions of parametric analysis before commencing analysis. Except otherwise stated, all significant values in the study were set at an alpha level of < .05, at 95% confidence interval.

Following the initial descriptive statistics and assumption tests, inferential statistics were conducted to test for the various study hypotheses. However, for the purposes of this statistics, the original background data of respondents (in table 3.2) were transformed as much as possible since some categories in the various variables had few or no cases. Accordingly, under demographic data, marital status was dichotomized into married (consisting of those married and those co-habiting) and not married (consisting of single, widowed and divorced categories) groups. Ethnicity was also transformed to three main categories; Akans, Northerners and others (consisting of all other ethnic groups outside of the aforementioned two). Occupation was also transformed to a dichotomous variable, gainfully employed (for civil servants, self-employed and farmers) and not gainfully employed (consisting of the not employed category, students and others).

Under injury characteristics, type of RTA was dichotomized into vehicle and motor or cycles (for all non-vehicular accidents). Location was also transformed to three main categories; upper part of body (consisting of injuries to the face and head, trunk and upper limbs), lower part of the body (consisting of injuries below the waist line, i.e. pelvis and lower limbs) and multiple sites. Type of injury was also dichotomized into skin and soft tissue injuries and musculoskeletal injuries.

Following successful data transformation, the Pearson's chi square test was used to assess for associations between the background variables and the dichotomized outcome variables

(Psychosocial distress and PTSD); analysis of variance (ANOVA) test and independent sample t-test were used to examine any variations in psychosocial problems among the participants' in relation to their background characteristics, the Pearson's product-moment correlation (Pearson's *r*) was used to investigate the correlations between the continuous variables of the study.

For moderating effect of PSS on coping and psychosocial problems (psychosocial distress), the hierarchical multiple regression analysis was used in five different models/blocks. Before this analysis, categorical variables with more than two categories (injury duration) were dummy coded before they were entered into the model whilst dichotomous variables were entered directly into the model. In order to avoid multicollinearity and as such prevent Type I error, all continuous independent variables were mean centered before their interactions terms were computed (Aiken, West, & Reno, 1991; J. Cohen, P. Cohen, West, & Aiken, 2013). Two-way interactions between the predictor variables and the outcome variables were created through multiplication of predictor variables and perceived social support (such as emotion focused coping x perceived social support).

CHAPTER FOUR

FINDINGS

4.0 Introduction

This chapter provides summary of the findings of the study the study on the Psychosocial Effects of Traumatic Injuries of RTA victims. In this chapter, the study variables were succinctly described using descriptive analysis such as frequencies, means and standard deviations. The hypotheses formulated in the chapter two of this work were analysed using four statistical tools as noted previously.

4.1 Descriptive Statistics

4.1.1 Preliminary Analysis

Table 4.1 summarizes the means *(M)*, standard deviations (*SD),* Cronbach's alpha (α) and normality testing of the study variables. The reliability coefficients obtained ranged from .64 to .84 for stress appraisal scale, .77 to .83 for coping inventory, .84 to .93 for social support scale, .47 to .63 for general health questionnaire (.75 for total scale). Normality testing was done using skewness and kurtosis to determine the extent to which the tests used in the study were normally distributed across the scores of the respondents since Shapiro Wilk and Kolmogorov-Smirnov test may not be reliable in large sample sizes (example exceeding 300) (Altman & Bland, 1995; Ghasemi & Zahediasl, 2012; Kim, 2015). Generally, skewness ranging from -1 to 1 is considered normal and -2 to 2 is considered acceptable (George & Mallery, 2010). Moreover, Kim (2015) averred that, either an absolute skewness value greater than 2 or an absolute kurtosis greater than 7 may be used as reference values to determine substantial non-normality. Impliedly, the data is normally distributed.

The means of the various study measures as well as the total scores for scales with subscales were calculated where applicable. The results indicate that, the most common type of primary appraisal used by the respondents was centrality, with a mean of 10.39 (*SD* = 3.18) with challenge identified as the least form of primary appraisal (*M* = 8.74, *SD* =2.36). Regarding secondary appraisal, controllable by self was the most common type identified among respondents (*M* = 11.24, *SD* = 3.20) whereas uncontrollable was the least common secondary appraisal type identified (*M* = 7.12, *SD* = 2.30). Task oriented coping (*M* = 19.32, *SD* = 5.02) and family support (*M* = 22.47, *SD* = 5.02) were identified as the common coping style and form of social support among respondents respectively.

Table 4.1: Summary of Means, Standard Deviations, Alpha, Skewness and Kurtosis of Measures used in the Study

Variable/Scale	No. of items	Mean	*SD*	Min	Max	Alpha	Skewness	Kurtosis
SAM (Total)	(28)					(.78)		
Threat	4	10.22	3.05	4.00	19.00	.75	.55	-.06
Challenge	4	8.74	2.36	4.00	18.00	.65	1.01	1.56
Centrality	4	10.39	3.18	4.00	20.00	.75	.41	-.17
CBO	4	8.41	2.37	4.00	17.00	.68	.71	.37
CBS	4	11.24	3.20	5.00	20.00	.78	.32	-.54
UNCT	4	7.12	2.30	4.00	18.00	.74	1.26	2.87
GPS	4	8.48	3.03	4.00	20.00	.84	.88	.63
CISS (Total)	(21)					(.81)		
EOC	7	15.52	4.56	7.00	30.00	.83	.61	-.013
TOC	7	19.37	5.02	7.00	35.00	.79	.49	-.014
AC	7	13.58	4.29	7.00	29.00	.77	.74	.13
GHQ (Total)	(12)	(4.29)	(2.8)	(.00)	(12.00)	(.75)	(.64)	(.02)
Anxiety/Depression	4	1.39	1.29	.00	4.00	.63	.52	-.88
Social Dysfunction	6	2.59	1.58	.00	6.00	.57	.11	-.66
Lack of Confidence	2	.31	.58	.00	2.00	.47	1.74	1.93
PTSD	5	1.45	1.31	.00	5.00	.53	.67	-.19
MSPSS (Total)	(12)	(60.34)	(10.06)	(30.00)	(82.00)	(.90)	(-.61)	(.21)
Family	4	22.47	4.11	10.00	28.00	.89	-.51	-.29
Friends	4	17.93	3.50	7.00	28.00	.84	-.67	.83
Special Person	4	19.94	4.85	4.00	28.00	.93	-.56	-.05

Note: *1. SAM = Stress Appraisal Measure, 2. CBO = Controlled by Others, 3. CBS = Controlled by Self, 4. UNCT = Uncontrollable, 5. GPS = General Perceived Stressfulness, 6. CISS = Coping Inventory for Stressful Situations, 7. EOC = Emotion Oriented Coping, 8. TOC= Task Oriented Coping, 9. AC = Avoidant Coping, 10. GHQ = General Health Questionnaire, 11. PTSD = Post Traumatic Stress Disorder, 12. MSPSS = Multidimensional Scale of Perceived Social Support*

4.1.2 Prevalence of Psychosocial Distress among Respondents

The tables (4.2a and 4.2b) below show the prevalence of psychiatric morbidities among the respondents. Using a mean score (4.29) of the total sample (382), two hundred and twenty seven (227) had a GHQ score above the mean, indicating a prevalence of 40.6%.

Table 4.2a: Prevalence of Psychosocial Distress

Psychosocial Distress	Frequency (N=382)	Percentage (%)
No	227	59.4
Yes	155	40.6

4.1.3 Prevalence of Post-Traumatic Stress Disorder

The total valid sample size for this variable was 177. Out of this, 'optimally sensitive' cases were 39, representing 22% of the valid sample. Eleven (11) of the sensitive cases scored positive for optimally efficient PTSD test, representing 6.1% of the total sample.

Table 4.2b: Prevalence of PTSD

PTSD Status	Frequency	Percentage
No PTSD	138	78.0
Sensitive	28	15.9
Efficient	11	6.1

4.1.4 Levels of Perceived Social Support

Table 4.3 describes the levels of Perceived Social support among the respondents. The table shows that, majority of respondents (63.4%, *n* = 242) had moderate perceived support whilst 24.6% (*n* = 94) had high perceived social support

Table 4.3: Levels of Perceived Social Support

Levels of PSS	Frequency	Percentage
Low Perceived Support	46	12.0
Moderate Perceived Support	242	63.4
High Perceived Support	94	24.6

4.2 Inferential Statistics

Various inferential statistics including Pearson's Chi-Square, ANOVA, Independent sample t-Test, Correlational and Multiple Regression analysis were done to test the various hypotheses stated at the beginning of the study.

4.3 Hypothesis Testing

4.3.1 Associations between Respondents' Background Characteristics and Psychosocial Outcomes.

Hypothesis one: there will be significant association between

a. Socio-demographic background (age, sex, level of education, marital status, ethnic background, religious background and employment status) and psychosocial outcomes;

b. Clinical/injury characteristics (type, location, duration) will demonstrate significant association with psychosocial outcomes of respondents.

In testing for this hypothesis, the Pearson Chi-Square test was used to identify any association between the various background information (demographic and injury/clinical characteristics) and the outcome variable in their dichotomized forms.

Table 4.4 describes the findings of the Pearson's - chi square test performed to identify relationships between the respondents, background information (socio-demographic and clinical characteristics) and the two outcome variables (General Psychosocial distress and PTSD). The results indicated that, there was no significant relationship between most socio-demographic variables and the outcome variables (general psychosocial distress and PTSD). On GHQ scores, gender, age, level of education, religious background, occupation and ethnicity exhibited no significant relationship with the development of psychosocial distress with respective Pearson Chi-Square (χ^2) values of .531, 1.98, 1.23, 1.12, .31 and 5.36 (all *p*s > .05). There was a significant relationship between psychosocial distress and marital status, $\chi^2 = 5.81$, $p = .016$. No significant relationship was identified between the demographic variables and the development of PTSD as summarized in the table 4.4 below.

On the clinical characteristics of respondents, the study exhibited varied findings. The study showed a significant relationship between the type of patient (hospitalized versus non-hospitalized) and both psychosocial distress ($\chi^2 = 25.86$, $p < .001$) and PTSD ($\chi^2 = 16.48$, $p < .001$). On the type of injury, a significant correlation was found between the injury types and psychosocial distress ($\chi^2 = 42.28$, $p < .001$) as well as PTSD ($\chi^2 = 7.71$, $p = .005$). There was a significant relationship between duration of injury and psychosocial distress ($\chi^2 = 26.64$, $p < .001$) as well as PTSD ($\chi^2 = 11.83$, $p = .002$). The study however did not detect any significant relationship between

the location of injury and type of victim on both outcome variables with respective Chi-Square values of 4.43 (p = .11) and 2.18 (p = .331) on the psychosocial distress; then 2.299 (p = .308) and 2.04 (p = .356) on the PTSD. Interestingly, the study revealed a significant relationship between the type of RTA and the development of psychosocial distress (χ^2 = 11.49, p = .001) with those involved in vehicular accident appearing to be prone to the development of the psychosocial distress than those involved in motor or cycle accidents.

Table 4.4: Association between Respondent's background Characteristics and Psychosocial Problems using Pearson's Chi-Square test

Variable		General Psychosocial Distress				Post-Traumatic Stress Disorder			
		Negative n (%)	Positive n (%)	Total n (%)	Statistic	Negative n (%)	Sensitive n (%)	Total n (%)	statistic
Demographic variables									
Gender	Male	156 (60.7)	101 (39.3)	257 (67.3)		94 (77.7)	27 (22.3)	121 (68.4)	
	Female	71(56.8)	54 (43.2)	125 (32.7)	.531	44 (78.6)	12 (21.4)	56 (31.6)	.017
Age (years)	18 – 25	46 (63.9)	26 (36.1)	72 (18.8)		31 (88.6)	4 (11.4)	35 (19.8)	
	26 – 39	101 (61.2)	64 (38.8)	165 (43.2)		58 (79.5)	15 (20.5)	73 (41.2)	
	40 – 60	74 (55.2)	60 (44.8)	134 (35.5)		43 (69.4)	19 (30.6)	62 (35.0)	
	Above 60	6 (54.5)	5 (45.5)	11 (2.9)	1.95[b]	6 (85.7)	1 (14.3)	7 (4.0)	5.01[b]
Level of education	None	16 (66.7)	8 (33.3)	24 (6.3)		12 (80.0)	3 (20.0)	15 (8.5)	
	Primary	35 (54.7)	29 (45.3)	64 (16.8)		18 (60.0)	12 (40.0)	30 (16,9)	
	JHS	94 (59.9)	63 (40.1)	157 (41.1)		63 (85.1)	11 (6.2)	74 (41.8)	
	SHS	60 (60.6)	39 (39.4)	99 (25.9)		31 (77.5)	9 (22.5)	40 (22.6)	
	Tertiary	22 (57.9)	16 (42.1)	38 (9.9)	1.23	14 (77.8)	4 (2.3)	18 (10.2)	7.48[b]
Religion	Christian	154 (57.7)	113 (42.3)	267 (69.9)		92 (74.8)	31 (25.2)	123 (69.5)	
	Muslim	73 (63.5)	42 (36.5)	115 (30.1)	1.122	46 (85.2)	8 (14.8)	54 (30.5)	2.357
Marital status	Not married	98 (67.1)	48 (32.9)	146 (38.2)		57 (80.3)	14 (19.7)	71 (40.1)	
	Married	129 (54.7)	107 (45.3)	236 (61.8)	5.81*	81 (76.4)	25 (23.6)	106 (59.9)	.37
Ethnicity	Akan	117 (54.4)	98 (45.6)	215 (56.3)		69 (74.2)	24 (25.8)	93 (52.5)	
	Northerner	87 (64.9)	47 (35.1)	134 (35.1)		58 (82.9)	12 (17.1)	70 (39.5)	
	Others	23 (69.7)	10 (30.3)	33 (8.6)	5.36	11 (78.6)	3 (21.4)	14 (7.9)	1.73[b]
Occupation	Gainfully employed	195 (58.7)	137 (41.3)	332 (86.9)		115 (78.8)	31 (21.2)	146 (82.5)	
	Not employed	32 (64.0)	18 (36.0)	50 (13.1)	.305	23 (74.2)	8 (25.8)	31 (17.5)	.311

Injury/Clinical characteristics

Type of patient	Hospitalized	141 (51.3)	134 (48.7)	275 (72.0)		52 (64.2)	29 (35.8)	81 (45.8)	
	Non-Hospitalized	86 (80.4)	21 (19.6)	107 (28.0)	25.86**	86 (89.6)	10 (10.4)	96 (54.2)	16.48**
Type of RTA	Vehicular	108 (51.7)	101 (48.3)	209 (54.7)		64 (75.3)	21 (11.9)	85 (48.0)	
	Motor or cycles	119 (68.8)	54 (31.2)	173 (45.3)	11.494*	74 (80.4)	18 (19.6)	92 (52.0)	.680
Type of victim	Driver/Rider	78 (60.5)	51 (39.5)	129 (33.8)		48 (77.4)	14 (22.6)	62 (35.0)	
	Passenger	81 (55.1)	66 (44.9)	147 (38.5)		54 (83.1)	11 (16.9)	65 (36.7)	
	Pedestrian	68 (64.2)	38 (35.8)	106 (27.7)	2.18	36 (72.0)	14 (28.0)	50 (28.2)	2.04
Location	Upper body	110 (64.7)	60 (35.3)	170 (44.5)		57 (74.0)	20 (26.0)	77 (43.5)	
	Lower body	110 (54.5)	92 (45.5)	202 (52.9)		77 (81.9)	17 (18.1)	94 (53.1)	
	Multiple sites	7 (70.0)	3 (30.0)	10 (2.6)	4.43[b]	4 (66.7)	2 (33.3)	6 (3.4)	2.299[b]
Type of injury	Skin/Soft tissue	98 (84.5)	18 (15.5)	116 (30.4)		45 (91.8)	4 (8.2)	49 (27.8)	
	Musculoskeletal	128 (48.3)	137 (51.7)	265 (69.6)	42.28**	92 (72.4)	35 (27.6)	127 (72.2)	7.71*
Duration	Less than 1 month	105 (51.2)	100 (48.8)	205 (53.7)					
	1-3 months	95 (77.9)	27 (22.1)	122 (31.9)		104 (85.2)	18 (14.8)	122 (68.9)	
	4-6 months	21 (47.7)	23 (52.3)	44 (11.5)		27 (61.4)	17 (38.6)	44 (24.9)	
	Beyond 6 months	6 (54.5)	5 (45.5)	11 (2.9)	26.64[b]**	7 (63.6)	4 (36.4)	11 (6.2)	11.834[b]*

[b] Based on Fisher's exact
** $p < .001$ level
* $p < .05$

4.3.2 Mean-level Analysis of Background Characteristics of Respondents on Psychosocial Outcomes

Hypothesis 2: Psychosocial problems will vary across the various demographic and injury characteristics groupings.

This hypothesis was tested using ANOVA and independent sample t-test.

The table (4.5a) below describes the comparison of the means of the socio-demographic variables with the total scores of the two outcome variables: General Psychosocial Distress and Post -Traumatic Stress Disorder (PTSD). One way analysis of variance (ANOVA) test was run to identify the mean difference of psychosocial distress and PTSD scores between demographic data with more than two categories (i.e; age, educational background, marital status, ethnic background and occupation). Mean scores of demographic data with two categories (i.e., gender and religious background) were compared using the independent sample t-Test.

Both tests did not yield any significant difference between the mean scores of the various demographic groupings on the GHQ scores except for the scores of the marital status and ethnicity groups. On the marital status, the married category demonstrated a significant higher mean score (M = 5.57, SD = 2.90) than those who were not married (M = 3.83, SD = 2.59), t(333.26) = -2.59, p = .01. On ethnicity, the ANOVA result indicated a significant variation between the groups (F[2, 379] = 3.18, p = .04). However, the magnitude of the effect was small ($\eta 2$ = .016) as demonstrated by a non-significant result from the post-hoc analysis using the Bonferroni adjusted alpha of .017.

On the scores of PTSD, both test did not produce any significant variations among the various groupings as indicated in the table.

Table 4.5a: Comparison of the Demographic Background of Respondents on the Total scores of Outcome Variables using ANOVA and Independent Sample t-Test

Variable	General Psychosocial Distress (GHQ): N = 382					Post-Traumatic Stress Disorder: N = 177				
	N	M(SD)	Statistic	Df	η2	n	M(SD)	Statistic	df	η2
Sex[@]			-1.22	380	.004			-.82	175	.004
Male	257	4.16 (2.72)				121	1.40 (1.41)			
Female	125	4.54 (2.96)				56	1.57 (1.43)			
Age			.83	3, 378	.007			1.53 (.21)	3, 173	.026
18 – 25	72	3.82 (2.51)				35	1.11 (.96)			
26 – 39	165	4.42 (2.89)				73	1.42 (1.32)			
40 – 60	134	4.35 (2.83)				62	1.69 (1.44)			
Above 60	11	4.45 (3.11)				7	1.29 (1.38)			
Education			.46	4, 377	.0048			.87	4, 174	.0199
None	24	4.08 (4.18)				15	1.60 (1.59)			
Primary	64	4.59 (3.03)				30	1.60 (1.38)			
JHS	157	4.36 (2.59)				74	1.27 (1.25)			
SHS	99	4.16 (2.66)				40	1.45 (1.18)			
Tertiary	38	3.92 (2.69)				18	1.83 (1.50)			
Religion[@]			.36	184.96	.0003			1.67	175	.016
Christian	267	4.32 (2.63)				123	1.57 (1.33)			
Muslim	115	4.20 (3.17)				54	1.20 (1.25)			

Marital status[@]			-2.59*	333.26	.017			.35	169.00	.001
Not married	146	3.83 (2.59)				71	1.49 (1.14)			
Married	236	4.57 (2.90)				106	1.42 (1.42)			
Employment[@]			1.20	380	.004			.30	175	.001
Employed	332	4.35 (2.82)				146	1.47 (1.30)			
Not Employed	50	3.82 (2.69)				31	1.39 (1.38)			
Ethnicity			3.18*	2, 379	.016			.93	4, 172	.011
Akan	215	4.53 (2.84)				93	1.56 (1.36)			
Northerner	134	4.14 (2.79)				70	1.29 (1.22)			
Others	33	3.27 (2.47)				4	1.57 (1.45)			

Note: JHS = Junior High School; SHS = Senior High School; df = degree of freedom, η2 = partial eta squared (effect size)

[@] = Independent sample t-Test

**p < .05*

Table 4.5b (below) describes the variations in psychosocial experience among the respondents in relation to their respective clinical history using ANOVA and independent sample t-test. Variables with more than two categories (injury location and duration) were analysed using ANOVA whilst dichotomous variables (type of injury and type of patient) were analysed using the Independent sample t-test. The variables were initially tested for the assumptions of ANOVA and t-test with no serious violations identified. The ANOVA result indicated a statistically significant difference between the mean scores of the groups under location of injury (F[2, 379] = 6.41, p < .001) and injury duration (F[3, 378] = 11.52, p < .001) on the GHQ scores. The magnitude of the effects using the Cohen's rule indicated a large effect for injury duration ($\eta 2$ = .14) and small effect for location of injury variations ($\eta 2$ = .03). For the comparison of the mean scores of the various groups on the PTSD scores, the result exhibited a significant difference between the scores of the duration of injury (F[2, 174] = 6.44, p = .002, $\eta 2$ = .07). There was no significant difference between the mean scores of the location of injury (F[2, 74] = .27, p = .766) on PTSD scores.

The t-test revealed a significant difference in the total scores of GHQ for those with injuries to the skin, muscles and other soft tissues (M = 2.41, SD = 2.11) and those with skeletal injuries (M = 5.11, SD = 2.68), t(274.95) = -10.50, p < .001. Those with skeletal injuries recorded higher mean scores than those with injuries to the skin and soft tissues only. Similarly, the t-test conducted to compare the groups under the scores of PTSD indicated statistically significant difference between the mean scores of the two groups. The mean score of those with skin, muscles and soft tissue injuries (M = .92, SD = 1.04) was significantly lower than those with skeletal injuries (M = 1.67, SD = 1.35), t(174) = -3.51, p = .001. The magnitude of the mean difference was large ($\eta 2$ = .24) and moderate ($\eta 2$ = .09) for total GHQ and PTSD scores respectively using the Cohen's (1969) rule (S. Cohen, 1992).

Post-hoc analysis using the Games – Howell post hoc analysis done for the duration of injury (Levene's test (3, 378) = 8.71, $p < .05$) on GHQ revealed that, those with injury duration between one and three months recorded statistically significant lower mean score ($M = 3.11$, $SD = 2.12$) than the other three categories: less than one month ($M = 4.87$, $SD = 3.01$), $p < .001$; 4-6 months ($M = 4.64$, $SD = 2.71$), $p = .007$ and above six months ($M = 5.00$, $SD = 2.00$), $p = .048$. On the PTSD score, post hoc analysis was done using the Games-Howell test (Levene's test (2, 174) = 4.51, $p < .05$) indicated a significant higher mean score for those with injury duration between 4-6 months ($M = 1.98$, $SD = 1.56$) than those whose injuries were between 1-3 months ($M = 1.22$, $SD = 1.12$), $p = .013$.

For the location of injury, post hoc analysis done using the Bonferroni adjusted alpha of .017 (.05/3) indicated that, respondents with injuries to the lower part of the body recorded statistically significant higher mean scores ($M = 4.75$, $SD = 2.85$) than those with upper body part injuries ($M = 3.80$, $SD = 2.67$), $p = .003$ on the scores of GHQ. Post hoc analysis for PTSD scores did not yield any statistically significant difference between the mean scores of the various categories of the group.

Table 4.5b: Comparison of Clinical Background on the Total scores of GHQ and PTSD using ANOVA and Independent t-test

Variable	General Psychosocial Distress (GHQ): N = 382					Post-Traumatic Stress Disorder: N = 177				
	N	*M* (*SD*)	Statistic	Df	η2	n	*M* (*SD*)	Statistic	df	η2
Location of injury			6.41*	2, 379	.03			.27	2, 174	.003
Upper part of body	170	3.80 (2.67)				77	1.38 (1.28)			
Lower part of body	202	4.74 (2.85)				94	1.50 (1.31)			
Multiple sites	10	3.10 (2.81)				6	1.67 (1.97)			
Type of Injury[@]			-10.50**	274.95	.23			-3.94**	112.96	.09
Skin and soft tissue	116	2.41 (2.11)				49	.91 (1.04)			
Musculoskeletal	265	5.10 (2.68)				127	1.67 (1.35)			
Duration of Injury			11.52**	3, 378	.14			6.44*	2, 174	.07
Less than one month	205	4.87 (3.01)								
1 - 3 months	122	3.11 (2.12)				122	1.22 (1.12)			
4 – 6 months	44	4.64 (2.71)				44	1.98 (1.56)			
Above 6 months	11	5.00 (2.00)				11	1.91 (1.58)			
Type of patient[@]			7.89**	276.08	.14					
Hospitalized	275	4.86 (2.87)				81	1.85 (1.41)	3.79**	152.90	.08
Non-hospitalized	107	2.81 (2.00)				96	1.11 (1.13)			

**p < .001 level

*p < .05 level;

[@] independent sample t-test

Hypothesis 2c: There will be significant difference between the psychosocial outcome of hospitalized and non-hospitalized patients.

The result of the analysis as indicated in table 4.5b showed that, there was a significant difference between the scores of hospitalized (M = 4.86, SD = 2.87) and non-hospitalized (M = 2.81, SD = 2.00) patients, $t(276.08) = 7.89$, $p < .001$ under GHQ total scores. Similarly, the t-test conducted to compare the groups under the scores of PTSD indicated statistically significant difference between the mean scores of those that were hospitalized (M = 1.85, SD = 1.41) and non-hospitalized (M = 1.11, SD = 1.13) patients, $t(153.00) = 3.79$, $p < .001$. In both instances, the hospitalized category demonstrated higher mean scores than the non-hospitalized category suggesting that, development of psychosocial problems may be higher in those admitted at the hospital than out-patients. The magnitude of the mean difference was large ($\eta 2 = .14$) and moderate ($\eta 2 = .08$) for total GHQ and PTSD scores respectively (Cohen, 1992). Thus, this hypothesis has been confirmed.

4.3.3 Bivariate Correlation Analysis of Continuous Variables

Table 4.6 shows the results of the Pearson Product-Moment Correlation matrix between the continuous variables and psychosocial outcome. The findings in the table indicates that psychosocial outcomes of the General Health Questionnaire had significant positive correlation with negative stress appraisal: threat (r [382] = .53), centrality (r [382] = .54), uncontrollable (r [382] = .57) and total perceived stressfulness (r [382] = .69) all at $p < .001$. Post-Traumatic Stress Disorder also had significant positive correlation with negative stress appraisal: threat (r [177] = .56), centrality (r [177] = .47), uncontrollable (r [177] = .54) and general perceived stressfulness (r [177] = .61) all at $p < .001$. On the relationship between coping and appraisal, emotion focused coping had significant positive correlation with negative stress appraisal subscales: threat (r [382]

= .20), centrality (r [382] = .22), uncontrollable (r [382] = .26) and general perceived stressfulness (*r* [382] = .25) all with $p < .001$. General psychosocial outcomes of respondents also showed significant negative correlation with subscales of perceived social support: family support (*r* [382] = -.47, $p < .001$), friends support (r [382] = -.23, $p < .001$) and significant others support (*r* [382] = -.39, $p < .001$). There was also a significant negative relationship between PTSD and family support (*r* [177] = -.42) and special person support (*r* [177] = -.32) with $p < .001$.

Table 4.6: Pearson Correlation between Stress Appraisal, Coping Methods, Perceived Social Support and Psychosocial Outcomes

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Challenge	-																	
2. Threat	.01	-																
3. Centrality	.04	.63**	-															
4. CBO	.11*	-.03	-.01	-														
5. CBS	.23**	-.19**	-.23**	.07	-													
6. UNCT	-.15**	.45**	.41**	-.27**	-.01	-												
7. GPS	-.06	.61**	.60**	-.26**	.03	.63**	-											
8. AC	-.00	-.05	.04	.16**	..03	.10*	-.01	-										
9. TOC	.21**	-.17**	-.06	.26**	.05	-.14**	-.20**	.20**	-									
10. EFC	.11*	.20**	.22**	-.00	.08	.26**	.25**	.31**	.05	-								
11. SP	.14**	-.30**	-.25**	.32**	-.05	-.42**	-.46**	-.03	.19**	-.06	-							
12. FAM	.23**	-.29**	-.28**	.37**	-.08	-.51**	-.51**	.02	.24**	-.03	.70**	-						
13. FRI	-.01	-.21**	-.19**	.07	.07	-.08	-.20**	-.01	.11*	-.03	.42**	.23**	-					
14. TPSS	.16**	-.33**	-.30**	.33**	-.03	-.44**	-.50**	-.01	.23**	-.05	.91**	.83**	.64**	-				
15. Anxiety	-.14**	.43**	.45**	-.34**	.07	.55**	.67**	-.15**	-.25**	.12*	-.38**	-.50**	-.18**	-.45**	-			
16. LoC.	-.01	.27**	.27**	.22**	-.13*	.47**	.48**	.06	-.10	.13**	-.36**	-.48**	-.10	-.40**	.55**	-		
17. Soc. Dysf.	-.08	.40**	.34**	-.13*	-.03	.30**	.42**	-.17**	-.24**	-.02	-.24**	-.25**	-.23**	-.30**	.48**	.34**	-	
18. GPD	-.13*	.48**	.46**	-.27**	-.04	.52**	.64**	-.16**	-.27**	.07	-.39**	-.47**	-.23**	-.46**	.84**	.65**	.85**	-
19. PTSD	-.04	.56**	.47**	-.22**	-.05	.54**	.61**	.02	-.03	.14	-.32**	-.42**	-.11	-.35**	.64**	.38**	.35**	.57**

N (1-18 = 382); N (PTSD = 177). 1. CBO = Controlled by Others; 2. CBS = Controlled by Self; 3. UNCT = Uncontrollable; 4. GPS = General Perceived Stressfulness; 5. AC = Avoidant Coping; 6. TOC = Task Oriented Coping; 7. EFC = Emotion Focused Coping; 8. SP = Special Person support; 9. FAM = Family support; 10. FRI = Friends support; 11. TPSS = Total Perceived Social Support; 12. LoC = Lack of Confidence; 13. Soc. Dysf. = Social Dysfunction; 14. GPD = General Psychosocial Distress; 15. PTSD = Post-Traumatic Stress Disorder

**p < .001; *p <.05 (2-tailed)

Hypothesis 3

a. Injury (stress) appraisal will significantly relate to coping styles of respondents

b. Injury appraisal and coping styles will significantly relate to psychosocial outcome of RTA injuries.

c. PSS will show significant relationship with psychosocial outcomes of respondents

Result of the correlation matrix described in table 9 indicated that, hypothesis 3a was supported as significant relationships were found between the types of stress appraisals and respondents' coping styles. Likewise, 3b was also partly supported as there were significant relationships between some dimensions of (injury appraisal and coping mechanism) and the psychosocial outcome of respondents. Hypothesis 3c was fully supported on psychosocial distress as total score and scores all subscales of PSS showed significant negative relationship with psychosocial distress. For PTSD, the hypothesis was partly supported as one dimension (friends support) did not show a significant relationship with the outcome variable.

4.3.4 Moderating Analysis of the Influence of Perceived Social Support on Coping and Psychosocial Outcome

Hypothesis 4: Perceived social support will moderate the relationship between coping styles and psychosocial outcomes

Hierarchical multiple regression was used for the analysis of this hypothesis since it was the preferred method to investigate the effect of a moderating variable, especially when both the predictor and moderator variables are measured on a continuous scale. It is important to note, however that, this analysis was conducted only on psychosocial distress since the correlation analysis yielded a non-significant relationship between coping styles and PTSD. With previous

analysis showing significant relationship between some background information (marital status, type of injury, duration of injury and patient status) and psychosocial distress, these background information were entered into the first block to assess their predictability of the psychosocial distress. In block 2, appraisal variables were entered into the model. In the third block, coping styles, which were the predictor variables were entered to determine their effects on the outcome variable. The moderator variable (perceived social support) was then entered into the fourth block). In the fifth and final block, the interactions between the predictor variables and the moderator variable were entered into the model. The results are presented in table 4.7 below.

Table 4.7: Summary of Moderating effects of Perceived Social Support on the relationships between Coping styles and Psychosocial Distress using Hierarchical Multiple Regression Analysis

		Model 1					Model 2				
Variable		**B**	**SE**	**B**	***t***	***P***	**B**	**SE**	**β**	***t***	***p***
Constant		1.225	.781		1.569	.118	1.189	.646		1.839	.067
Marital status		.500	.251	.401	1.992	.047	.462	.208	.080	2.216	.027
Injury	1-3 months	-1.087	.314	-.180	-3.466	.001	-.373	.272	-.062	-1.371	.171
duration[+]	4-6 months	-.219	.431	-.025	-.509	.611	-.138	.358	-.016	-.385	.700
	Above 6 months	.248	.763	.015	.325	.745	.710	.638	.042	1.112	.267
Type of Injury		2.449	.273	.401	8.966	.000	1.676	.234	.275	7.156	.000
Patient status		-1.201	.330	-.192	-3.645	.000	-.299	.279	-.048	-1.072	.284
Threat							.013	.047	.014	.275	.783
Challenge							-.078	.045	-.065	-1.730	.084
Centrality							.073	.044	.082	1.663	.097
Controlled by Others							.022	.043	.019	.520	.603
Controlled by Self							-.036	.035	-.041	-1.040	.299
Uncontrollable							.124	.059	.102	2.107	.036
Total Perceived Stress							.374	.051	.402	7.286	.000
Model Summary		R^2 = .303; F(6,374) = 27.07 (p < .001)					R^2 = .544; (p < .001);	ΔR^2 = .241; F(13, 367) = 33.615 ΔF(7, 367) = 27.648 (p < .001)			

Table 4.7 continued

		Model 3					Model 4				
Variable		**B**	**SE**	***B***	***T***	***P***	**B**	**SE**	***β***	***t***	***p***
Constant		.911	.634		1.436	.152	.775	.627		1.236	.217
Marital status		.429	.203	.071	2.116	.035	.419	.200	.073	2.096	.037
Injury	1-3 months	-.466	.265	-.077	-1.757	.080	-.455	.262	-.075	-1.737	.083
duration[+]	4-6 months	-.278	.349	-.032	-.796	.427	-.303	.344	-.034	-.880	.379
	Above 6 months	.814	.617	.049	1.319	.188	.723	.609	.043	1.187	.236
Type of Injury		1.704	.230	.279	7.393	.000	1.770	.228	.290	7.762	.000
Patient status		-.043	.273	-.007	-.156	.876	-.008	.270	-.001	-.028	.977
Threat		-.020	.046	-.022	-.442	.659	-.027	.045	-.029	-.596	.551
Challenge		-.062	.044	-.052	-1.402	.162	-.056	.044	-.047	-1.272	.204
Centrality		.107	.043	.121	2.493	.013	.112	.042	.127	2.656	.008
Controlled by Others		.024	.042	.020	.578	.564	015	.041	.013	.374	.708
Controlled by Self		.005	.035	.006	.156	.876	.026	.035	.030	.761	.447
Uncontrollable		.171	.058	.140	2.934	.004	.144	.058	.118	2.478	.014
Total Perceived Stress		.351	.050	.377	6.996	.000	.302	.051	.325	5.873	.000
Avoidant coping		-.094	.025	-.143	-3.755	.000	-.102	.025	-.156	-4.125	.000
Task oriented coping		-.063	.021	-.112	-3.003	.003	-.056	.021	-.098	-2.655	.008
Emotion focused coping		-.002	.024	-.003	-.085	.932	.008	.024	.0113	.324	.746
Perceived Social Support							-.040	.012	-.142	-3.398	.001
Model Summary:		$R^2 = .577$; $\Delta R^2 = .034$; $F(16,364) = 31.09$; ($p < .001$); $\Delta F(3, 364)$ 9.753 ($p < .001$)					$R^2 = .591$; $\Delta R^2 = .013$ $F(17,363) = 30.793$ ($p < .001$) $\Delta F(1,363) = 11.547$ (p = .001)				

Table 4.7 continued

Variable		Model 5				
		B	**SE**	**β**	***t***	***p***
Constant		.838	.626		1.339	.181
Marital status		.416	.200	.072	2.082	.038
Injury duration[+]	1-3 months	-.435	.262	-.072	-1.660	.098
	4-6 months	-.292	.344	-.033	-.849	.396
	Above 6 months	.934	.615	.056	1.518	.130
Type of Injury		1.754	.228	.288	7.708	.000
Patient status		-.037	.271	-.006	-.137	.891
Threat		-.017	.045	-.019	-.386	.700
Challenge		-.051	.044	-.043	-1.156	.249
Centrality		.109	.042	.123	2.598	.010
Controlled by Others		.022	.042	.019	.536	.592
Controlled by Self		.032	.035	.036	.914	.361
Uncontrollable		.148	.061	.121	2.438	.015
Total Perceived Stress		.308	.052	..329	5.887	.000
Avoidant coping		-.097	.025	-.148	-3.929	.000
Task oriented coping		-.058	.021	-.103	-2.791	.006
Emotion focused coping		.003	.024	.005	.121	.904
Perceived Social Support		-.039	.012	-.138	-3.303	.001
Avoidant coping*Perceived Social Support		.005	.002	.085	2.206	.028
Task Oriented coping*Perceived Social Support		-.001	.002	-.019	-.532	.595
Emotion focused coping*Perceived Social Support		-.002	.002	-.044	-1.110	.268

Model Summary: $R^2 = .596$; $\Delta R^2 = .006$; $F(20, 360) = 26.576^{***}$ $\Delta F(3, 360) = 1.688$

N = 382. SE = Standard error;
[+] dummy variables

The results of the hierarchical multiple regression are summarized in tables 4.7. In the first step/model, participants' marital status, injury duration (1-3 months), type of injury and participant's admission status (hospitalized or non-hospitalized) all showed significant relationship with psychosocial distress. The whole model was significant and accounted for 30.3% of the variance in psychosocial distress (R^2 = .303, F[6, 374] = 27.073, p < .001)

After step 2 (model 2) variables were entered, marital status, and type of injury still had significant relationship with psychosocial distress whilst the relationship between patient's status, injury duration were insignificant. Block variables: uncontrollable (β = .102, t = 2.107, p = .036) and total perceived stressfulness (β = .402, t[367]= 7.286, p < .001) were significantly related with psychosocial distress. The seven additional variables explained 24.1% of the variance in psychosocial distress, R square change = .241, F change (7, 367) = 27.648, p < .001. The whole model was significant and explained 54.4% of the variance in psychosocial distress (R^2 = 54.4, F[13, 367] = 33.615, p < .001)

In the third block/step (see table 10b), the predictor variables (avoidant coping, task oriented coping and emotion focused coping) were entered into the model. The relationship between avoidant coping style (β = -.143, t[364] = -3.755, p < .001); task oriented coping style (β = -.112, t[364]= -3.003, p = .003) and psychosocial distress were found to be significant as both negatively predicted psychosocial distress after controlling for background characteristics and injury appraisals. The predictor variables explained additional 3.4% of the variance in psychosocial distress (ΔR^2 = .034, ΔF[3, 364] = 9.753, p < .001). The total block was significant and accounted for 57.7% of the variance in psychosocial distress (R^2 = .577, F[16,364) = 31.095, p < .001).

When the moderator variable was added in the fourth model, there was a significant additional variance of 1.3% ($\Delta F[1, 363] = 11.547$, $p = .001$). The whole model was significant and explained 59.1% of the variance in psychosocial distress, $F(17, 363) = 30.793$, $p < .001$). Finally, when the interactions between the predictor variables and the moderator variable were entered in the fifth block, the result indicated an insignificant change in variance ($\Delta R^2 = .006$, $\Delta F[3, 360] = 1.688$, $p = .169$). However, there was a significant interaction effect between avoidant coping and perceived social support on psychosocial distress ($\beta = .085$, $t[360] = 2.206$, $p = .028$). This, notwithstanding, the whole model was significant and explained 59.6% of the variance ($R^2 = .596$, $F[20, 360] = 26.576$, $p < .001$).

4.4 Summary of the Findings and Hypotheses tests

1. **Hypothesis 1a** stating that there will be significant association between sociodemographic characteristics (age, sex, level of education, marital status, ethnic background, employment status) and psychosocial outcomes of respondents has been partially supported as al socio-demographic variables (except marital status) showed insignificant association with both psychosocial distress and PTSD.
2. **Hypothesis 1b** which stated that injury characteristics (type, location, duration) will demonstrate significant association with psychosocial outcomes of respondents has been partially supported.
    - With the exception of location of injury, all other clinical/injury characteristics (type of injury, duration of injury and type of patient) showed significant association with both psychosocial distress and PTSD
3. **Hypothesis 2a** stating that there will be significant difference in psychosocial outcomes of respondents across demographic variables has been partly supported

- The mean scores of the various socio-demographic groups did not show significant variations apart from marital status (this showed significant variation on PTSD scores)

4. **Hypothesis 2b** which stated that psychosocial outcome of respondents will vary across the various injury characteristics of respondents was fully supported on psychosocial distress and partly supported on PTSD scores.
    - There was significant variation on GHQ scores for the various injury characteristic categories including location, duration and type of injury.
    - There was significant variation on the PTSD scores for the injury characteristic groups (but for location of injury).
5. **Hypothesis 2c** which stated that psychosocial problems will be higher in hospitalized patients than non-hospitalized patients has been fully supported as hospitalized patients showed significantly higher mean scores on both GHQ and PTSD scores than non-hospitalized patients.
6. **Hypothesis 3a** stating that injury (stress) appraisal will significantly relate to coping mechanisms of respondents has been partially supported
    - Task oriented coping showed significant relationship with five dimensions of appraisal (challenge, threat, controlled by others, uncontrollable and total perceived stressfulness) but not with centrality and controllable by self.
    - Emotion-focused coping also showed significant correlation with five dimensions of stress appraisal measure (challenge, threat, centrality, uncontrollable and total perceived stressfulness) but not with controllable by self and controllable by others.

- Avoidant coping also showed significant relationship with two stress appraisal measures (controllable by others and uncontrollable) but showed no significant relation with other stress appraisal measures.

7. **Hypothesis 3b** stating that injury appraisals, coping styles and PSS will significantly relate to psychosocial outcome of RTA injuries was partially supported.
   - All forms of stress appraisal showed significant relationship with GHQ scale
   - On PTSD, challenge and controlled by self' appraisals did not show any significant relationship whilst there were significant relationship between PTSD and the other stress appraisal sub-scales (threat, uncontrollable, controllable by others, centrality and total perceived stressfulness)
   - On coping styles, task oriented coping and avoidant coping both showed significant negative relationship with GHQ total scale whereas emotion-focused coping exhibited no relationship with GHQ.
   - None of the types of coping styles showed significant relationship with PTSD.
   - Subscales of MSPSS as well as the total scores of MSPSS all related significantly and negatively with psychosocial outcomes of respondents except friends support, which did not demonstrate a significant relationship with PTSD.
8. **Hypothesis 4** stated that PSS will moderate the relationship between coping styles and psychosocial outcome of victims of RTA with physical injuries. This hypothesis was partially supported as there was a significant interaction effect of avoidant coping and PSS on psychosocial distress. The interaction effect of PSS with other coping styles were not significant on the outcome variable.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Introduction

The study sought to identify the psychosocial problems associated with traumatic injuries sustained during road traffic accidents. Apart from this broad focus of the study, the study investigated some specific factors that contribute to the development of these psychosocial problems. Using the Lazarus and Folkman's transactional stress theory to conceptualize this work, key concepts and constructs as postulated by the theorists to influence psychosocial problems including life events (in this case the injury characteristics), appraisals, coping , social support and their interactions were also examined. The chapter therefore discussed the findings of the study within the context of the conceptual framework, guided by the hypothesis established earlier within the study and the empirical evidence reviewed in previous chapters of the work. Accordingly, the findings are discussed under five main headings: psychosocial problems associated with RTA injuries, patients' background characteristics and psychosocial problems, injury appraisals and psychosocial problems, coping and psychosocial problems and the influence of social support on psychosocial problems. The chapter however starts with the description of the respondents' background information.

5.1 Background Characteristics of Respondents

The respondents of the study were victims of RTA who had sustained traumatic injuries and were receiving care at the various study centers: Komfo Anokye Teaching Hospital, Manhyia District Hospital and Tafo Government Hospital all in the Kumasi Metropolis. Most of the respondents were male victims (n = 257, 63.3%) and the mean age of respondents was 36.80 ± 11.53. This suggests that more men are involved in RTA and its related injuries than women and

most victims of RTA are youth. The high prevalence in males and youth could be related to the fact that, men and youth in general mostly drive cars, ride motorcycles and tricycles than women. In Kumasi, commercial minibuses are the major means of transportation (known locally as "trotro") almost exclusively operated by men in their youthful ages, as demonstrated by the 2010 population and housing census (Ghana Statistical Service, 2014). Women are thus more afraid to drive and the few women who drive are mostly careful and engage in save driving than men. Consequently, most people across the globe, including Ghana see safe driving as a feminine feature (Cordellieri et al., 2016; Özkan & Lajunen, 2006), and men, mostly in their youthful ages will try to prove their masculine status. This may cause them to engage in reckless driving, over speeding and wrong overtaking which are major human factors associated with road accidents globally and in Ghana (Coleman, 2014; Mends-Brew, 2018; Ngeleja, 2015). These human factors are identified as the leading cause of RTAs in Ghana (Ngeleja, 2015). The study findings corroborate some earlier works done in Ghana and some other African countries (Afukaar et al., 2010; Blankson et al., 2019; Boniface, Museru, Kiloloma, & Munthali, 2016; Ossei, Agagli, Ayibor, Niako, & Asante, 2019).

Injuries to the lower part of the body, particularly the lower limbs were the most common site/location of injuries, accounting for nearly half (49.5) of all injuries. In all, musculoskeletal injuries were the most common type of injuries recorded over the period. Possible reasons could be that, victims with less severe injuries may not report to the hospital for treatment, especially during a time when patients felt reluctant to visit the hospitals for fear of contracting the novel COVID 19-infection. It is important to note that, patients who presented to the hospital with confirmed diagnosis of TBI and SCI were not included in the study as stated in an earlier section of this work.

5.2 Psychosocial Problems of RTA Patients with Traumatic Injuries

As the main objective for the study, the prevalence of psychosocial problems in victims of RTA related injuries was examined. The study findings partly support some previous studies, and yet, vary in other important considerations. The overall prevalence rate of psychosocial distress (including manifestations of anxiety/depression, social dysfunction and lack of confidence) was 40.6% whilst 22.0% was obtained for PTSD. When a standard deviation of ±5 across studies is estimated, the values are consistent with most report from both high and low and middle income countries including reports from systematic literature reviews which have indicated that psychosocial problems are very common in the injured victim, especially depression and anxiety (Iteke et al., 2011; Joseph et al., 2020; Wiseman et al., 2013).

However, the prevalence in the current study differ from some other previous reports both in high income and LMICs. On general psychosocial distress, the prevalence of 40.6% is lower than the 53.2% (Guest, Tran, Gopinath, Cameron, & Craig, 2018) and 58.7% (Wiseman, Foster, & Curtis, 2013) both reported from Australia; 49% from the USA (Fakhry et al., 2017) and notably, the 65.2% reported from a sister regional country, Nigeria (Ajibade et al., 2015). Conversely, the rate is higher than those reported in some other injury related studies including the average of 15% from a meta-analysis of studies from USA, UK and Australia (Dai et al., 2018), 19-23.5% of various psychiatric disorders in China (Wu, Zhang, Cheng, Lin, & Wang, 2017) and many other reported values from other high income countries (Ahl et al., 2017; de Munter et al., 2020; Kendrick et al., 2018). Notably, the prevalence is high above all values reported from six LMICs including Ghana by Jacob and associates (2019).

On PTSD, the current prevalence rate is lower than the 36% rate reported by Fakhry and colleagues (2017), 44.3% reported by Wiseman et al., (2015) from Australia but higher than 19.3%

reported Australia (Guest et al., 2018) and 15.4% from Ethiopia (Bedaso et al., 2020). The differences may possibly result from the differences in socio-cultural characteristics of respondents, the instruments used and other injury specific characteristics (Tudo et al., 2017). More elucidation to these reasons are presented in a later sections of this discussion. For instance, the study by Ajibe et al. (2015) was conducted in only orthopedic trauma patients who were all on hospitalization during the study using GHQ-28, which may have influenced the high prevalence rate identified in that study. Irrespective of the juxtapositions, the findings are indicative of high psychological problems among injured populations in Ghana compared with the general population.

5.3 Relationship and Differences between Background Characteristics of Respondents and Psychosocial Outcomes

It could be recalled that, in an earlier section of the study, it was hypothesized that psychosocial problems will be significantly associated with respondents' background characteristics, including socio-demographic and injury characteristics. There have been various assertions in extant literature that link demographic variables to the development of mental health problems globally and particularly in Ghana. These factors are as well largely postulated to be major predictive factors of psychological problems in the physically injured patient. Factors like sex, age, marital status, employment status, economic status among others have been implicated in previous studies (Addai & Andrees, 2015; Garg et al., Idrees et al., 2017; Iteke et al., 2011; Wu et al., 2017). These factors are considered to influence how an individual with an injury will likely appraise his stress, and subsequently cope with the stressful event. It was therefore expected that these factors will significantly relate with the development psychosocial problems. This, notwithstanding and in contrast with usual expectations, the findings of the current study did not

find any association between demographic variables and psychosocial problems, except marital status which showed some association with psychosocial distress. These findings were further supported by the non-significant results obtained for ANOVA test on the demographic variables. The initial ANOVA result seemed to suggest that, there were differences in the scores of GHQ for marital status and ethnicity, but a post-hoc analysis proved otherwise. This could be related to the differences in the expression of individual factors believed to influence psychosocial health, including coping, social support and appraisals. These findings are however consistent with other studies that reported non-significant association between socio- demographic variables and psychosocial problems (e.g., Sullivan et al., 2017).

Meanwhile, the section of the hypothesis that suggested that injury characteristics will be significantly related to psychosocial problems was largely supported. There were significant relationships between the type of injury and psychosocial distress as well as PTSD. The findings indicated that, the risk of developing psychosocial problems were higher in patients with musculoskeletal injuries. Buttressing this finding is the result of the ANOVA which revealed that, individuals with musculoskeletal injuries scored higher on the GHQ than those with soft tissue and skin injuries. The findings of the current study support other studies across the globe that have found strong association between the type of injury and psychosocial problems, especially in musculoskeletal injuries (Ajibade et al., 2015; Castillo, Archer, Newcomb, & Wegener, 2016; Srahbzu et al., 2018; Vu et al., 2019). Thus, severe injuries, mostly including fracture, multiple trauma involving skeletal system as well as injuries that may involve the pelvis may produce worse psychosocial distress than minor injuries that may only involve the skin and muscles.

This finding could be multifactorial. First, it may be related to the cost of treating skeletal injuries compared to the other soft tissue injuries (Castillo et al., 2016; von der Warth et al., 2020).

For instance, non-documented report from KATH indicates that, averagely, between 2,500.00 and 3,500.00 Ghana cedis (approximately 380.0 to 540.0 dollars) is required to undergo a surgery that requires open reduction with internal fixation (ORIF). This amount can hardly be afforded by the average Ghanaian without any external or social support. Again, patients with skeletal injuries may have prolonged healing time with increased length of stay at the hospital compared with those with soft tissue injuries, which may increase their prevalence of psychosocial problems.

More so, skeletal injuries are often associated with severe pains, risk of disability, increased dependency and higher perceived loss (Schemitsch & Nauth, 2020) which are usually associated with increased psychological disturbances. In contrast, Joseph et al. (2020) have suggested that, the mechanism of injury play more important role in the development of psychosocial problems, and opined that the type of injury has little or no influence on the psychosocial outcome of traumatic patients. It is also at variance with Roden-Foreman et al. (2018) who have argued that, irrespective of the type of injury, financial strength can be a better predictor of good psychological health post-injury.

On the location/site of injury, the Pearson Chi square did not reveal any significant association between the injury site and the risk of developing psychosocial problems. However, when ANOVA was conducted, the result showed that, the scores for the various categories (lower body part, upper body part and multiple site) on GHQ were significantly different ($p < .05$). Probing further, a post-hoc analysis indicated that, individuals with injuries to the lower part of the body (pelvis, legs and toes/feet) scored higher than the other categories. Similarly, Baecher et al. (2018) have identified that, development of psychiatric morbidity such as depression in trauma populations is higher for those with injuries affecting the lower part of the body (pelvis, leg and feet) than individuals with upper body part injuries. To some extent, this may probably be a

reflection of the effect of injuries to the pelvis and legs on the physiological abilities of such affected persons as well as the perceived and actual implications it may have on their daily activities and movement, including performance of activities of daily living (ADLs). The findings also corroborate a study from three European countries (Papadakaki et al. 2017) as well as that of (Sluys et al., 2016) and (Srahbzu et al., 2018). On the contrary, Cheung et al. (2003) asserted that, injuries to the upper extremity may be more detrimental to psychosocial health than lower extremity injuries.

Like the work of Baecher et al. (2018), the current study did not find any association nor variation between PTSD and location of injury. However, and in contrast to this finding, some studies in a systematic review and meta-analysis (Muscatelli et al., 2017) identified significant association between injury location and the development of PTSD symptoms.

The result of the current study, like some other studies (e.g., Yohannes et al., 2018) identified a significant relationship between post-incident duration and psychosocial problems. The result of the Pearson Chi square showed that, the risk of developing psychosocial problems was lower in patients with injury duration between one to three months for both PTSD and psychosocial distress. In all, injury duration between four to six months seemed to cause the highest risk, especially in patients with PTSD symptoms. This finding was further proven by the ANOVA test and post-hoc analysis after the ANOVA test. This partly contradicts the general assertion that psychosocial problems wear off with time, and that psychosocial problems may be higher during the acute stages of a stress (Heron-Delaney et al., 2013; Wiseman et al., 2015). The result for the acute phase of the injury supports these earlier assertions, but unlike those studies, there was a resurgence of psychosocial problems when the injury existed beyond three months. This may suggest that, an injury with delayed healing may cause further psychosocial problems

with passing time. However, the findings corroborate other studies that have suggested otherwise, such as the conclusion from the systematic review by Craig, Tran, et al. (2016).

One of the hypotheses of the study sought to identify whether hospitalization could influence the experience of psychosocial problems in injured patients and to identify the variations in psychosocial problems in hospitalized and non-hospitalized patients. The findings indicated that, patient status was significantly associated with the development of psychosocial problems, suggesting that psychosocial distress and PTSD were higher in hospitalized patients than non-hospitalized patients. This could be related to the fears and general anxiety experienced by patients on admission. In Ghana and especially Kumasi, most people believe that, being admitted to the hospital is an indication of how "bad" one's condition may be. With KATH being a tertiary facility, most in-patients were referred from lower level institutions. This may make the experience of anxiety worse as people perceive referred cases as "bad". Again, hospitalization and increased length of stay is associated with extra cost of care to both patients and relatives, which may aggravate the experience of psychosocial problems (von der Warth et al., 2020).

Further, the outbreak of the novel COVID-19 may as well significantly influence the experience of psychosocial problems as Ohliger and associates (2020) have posited. The latter has been associated with extra stress induced by the pandemic on patients admitted to the hospital during the early phases of the condition (Oligher et al., 2020). This study corroborates other studies (e.g., Ahl et al., 2017). Again, it is consistent with the findings from Australia by Gopinath et al (2015) who identified that, within one year after injury, hospitalized patients generally exhibit poor physical and psychological wellbeing than non-hospitalized patients.

5.4 Injury Appraisal and Psychosocial Problems

As part of the objectives of this study, the common types of appraisal by respondents were explored. The study also examined the relationship between injury appraisal, coping mechanisms, perceived social support and psychosocial problems. The results from the study indicated that, among the various forms of primary stress appraisals, negative stress appraisal (threat) was frequently used than positive stress appraisal (challenge). An appraisal of centrality was also high, which in this case, may relate to threat appraisal since centrality is orthogonal to both threat and challenge. This means that, respondents believed their respective injuries had caused a significant harm/loss to them and that, the injuries were a danger to their health, social status and their life in general. Consistent with stress theories, appraisal of an event as stressful or relevant will require the individual to determine means of controlling the stressor (secondary appraisal) (Folkman, 2013; Krohne, 2002). However, most respondents believed their stress was controllable and could be controlled by themselves as demonstrated by a lower mean score for uncontrollable subscale (M = 7.12, SD = 2.30) and a higher mean score for controllable by self (M = 11.24, SD = 3.20).

The study findings indicated that, there were significant positive correlation between negative stress appraisals and the development of specific psychosocial problems (PTSD, anxiety/depression, social dysfunction and loss of confidence) as well as general psychosocial distress. The results showed that, appraisals of threat, centrality and uncontrollability were commonly associated with symptoms of anxiety/depression, social dysfunction, lack of confidence, PTSD among respondents. Conversely, those who felt their injuries were a challenge as well as those who appraised their injuries as controllable (either by self or others) showed negative correlation with psychosocial problems, with most variables showing significant relationships. Consistent with accumulated evidence on stress and appraisal (e.g. Machisa et al.,

2018; Mitchell et al., 2017; Olff, 2011), individuals who appraise events in their lives as threat or problematic with little controllability risk having negative consequences like psychosocial distress. These findings also substantiate the longitudinal study by Yueng and associates (2019) in Kenya where patients with worse appraisal of their injuries had elevated symptoms of depression and anxiety even after discharge. It however partially supports the study by Szkody and McKinney (2020) in the United States of America (USA) where primary appraisal measures were found to have no association with psychological and physical health, but secondary appraisal showed significant association with psychological and physical health among young adults with stress.

5.5 Coping Styles and Psychosocial Problems

On coping, one objective of the study was to examine the common types of coping styles employed by the respondents. The descriptive statistics of the various coping styles showed that, task oriented coping was the most common coping style used by respondents (M = 19.37 ± 5.02) followed by emotion focused coping (M = 15.52, ± 4.56). The least employed coping style was avoidant coping (M = 13.58 ± 4.29). This is an indication that individuals with injury are more likely to work towards finding lasting solution to their problems than to become emotional or try to avoid the problems. Similar results have been obtained in previous works by Roohafza et al. (2016); Bosmans et al. (2015) and Obayemi et al. (2020).

Since coping styles have been associated with psychological wellbeing in victims with stressful life events, it was hypothesized that coping was going to relate significantly with psychosocial outcomes. The findings indicated that, avoidant coping showed significant negative relationship with anxiety/depression, social dysfunction as well as general psychosocial distress and significantly predicted psychosocial distress in the hierarchical multiple regression analysis. Task oriented coping was significantly and negatively related with psychosocial distress as well

as anxiety/depression and social dysfunction subscales, with no significant relationship with PTSD and lack of confidence. Emotion focused coping correlated significantly and positively with lack of confidence and anxiety/depression. Although EFC showed some positive correlations with PTSD and general psychosocial distress, such relations were small and insignificant. When the results are evaluated in context of the theoretical framework, the findings suggest that, components of coping are significant predictors of psychosocial distress. The findings on adaptive coping styles (including task oriented coping) which have been linked with a better psychological wellbeing (Folkman, 2013; Olff, 2011) confirmed extant literature, including literature reviews and meta-analyses (Attoe & Pounds-Cornish, 2015; Garg et al., 2018; Noor et al. 2016).

Strangely, and opposed to theoretical frameworks and many other previous studies (Attoe & Pounds-Cornish, 2015; Bosmans et al., 2015; Garg et al., 2018; Noor et al. 2016), avoidant coping, which is almost always associated with negative psychological outcome was found to have significant negative relationship with psychosocial distress (i.e related positively with good psychological wellbeing). Likewise, emotion focused coping which is associated with positive psychological wellbeing also demonstrated positive relationship with psychosocial distress (i.e, was related negative with psychological outcome). This may probably be because, in patients with acute stressful conditions, the use of avoidant coping may be effective in producing temporary positive outcomes and allows the individual to plan and later think of task oriented coping in the long term (Lazarus & Folkman, 1984). Further, in the Ghanaian context, coping behaviour is highly related and influenced by religiosity, since majority of Ghanaians are either Christians or Muslims. (See & Essau, 2010). Visiting friends, calling loved ones and most other strategies employed in avoidant coping is likened with emotional maturity in these religious beliefs and once effective or available, could produce positive health outcomes. On the contrary, those who may

utilize active emotion coping strategies such as focusing on their inadequacies, blaming themselves, becoming upset and feeling anxious for not being able to cope (emotion focused coping items) are considered to be immature emotionally and can rather experience negative psychological outcome in a stressful situation.

Consequently, these findings may suggest that emotion focused and avoidant coping may have differing meanings and outcomes in different cultures, and as well may be linked to cultural specific outcomes. For example, other studies on coping in different populations with stress have demonstrated positive effect of avoidant coping on psychological wellbeing, whilst emotion focused coping demonstrated negative outcome on psychological outcome (Imran, MacBeth, Quayle, & Chan, 2020; Olabisi et al., 2020). This finding also seem to substantiate the results of a study from Tanzania (Obayemi et al., 2020) where respondents were found to mostly utilize adaptive coping styles, including emotion focused coping, and yet, the study recorded high levels of psychosocial distress (61%) among the participants.

In summary, with the exception of emotion focused coping style, all other forms of coping were found to produce a better psychological wellbeing in RTA victims with traumatic injuries in this study.

5.6 Influence of Perceived Social Support on Psychosocial Problems

Social interactions and the society in general have been described to have a direct effect in maintaining good mental health and guarding against suicidal tendencies (Santini, Koyanagi, Tyrovolas, Mason, & Haro, 2015; Tay, Tan, Diener, & Gonzalez, 2013). Among the factors known to cause functional mental health problems (neurosis), environmental factors have been strongly implicated, beside the individual's personal factors such as trait and personality. Among these environmental factors, relationships with family members, friends and other special people are

important to mention. In the presence of an external stressor, the reactions and assistance received from the people in these social circles can go a long way in determining the psychological outcome of the said stressor. Based on this, the study hypothesized that perception of available social support will have significant influence on the psychosocial health of the RTA injured victim. However, it was imperative to also investigate the level and common types of perceived social support available to respondents.

The findings from the descriptive analysis indicated that, the level of PSS was moderate to high. The most common form of PSS was from family members (M = 22.47, ± 4.11), followed by special person support with the least form of support from friends (M = 17.93, ± 3.50). This is an indication that, family members play significant role in supporting other family members who are challenged with stressful life situations. The high level of PSS among the respondents may be explained by the close family ties found among tribes and ethnic groupings in Ghana. In the Ghanaian culture and especially among Akans (who were the dominant ethnic group in the study), there are close ties between both members of the nuclear and extended family. In the typical Ghanaian and Akan society, members of these family systems may be seen staying in a family and/or compound houses together, with an interplay of interdependence (Clark, 1999; Weiss, 2002) As such, in times of bereavement, sickness or any major negative life event, most members of these family systems extend support which can either be tangible or non-tangible.

On the relationships between PSS and psychosocial problems, the correlation analysis demonstrated a negative relationship between social support and all psychosocial problems assessed. Uniquely, perceived family support exhibited the largest correlations compared with other sub-types of PSS as well as the total PSS. For example, on anxiety/depression, the correlation was (-.50), as against (-.38, -.18 and -.45) for special person, family and total perceived social

support respectively. This means that, participants who had highest level of perceived social support are likely to maintain or gain good psychological health where as those with low levels of perceived social support risk developing psychological problems after a traffic injury. This could be explained by the social and mostly family systems in Ghana, where the injured patient is likely to live with other family members who are always available to provide the needed support, either on admission to the hospital or at home. These findings are consistent with previous studies in other parts of the world. It is consistent with the study of Ning, Guan and Liu (2017) who found significant negative relationship between social support and PTSD in trauma patients in China. It also corroborates the study of Roohafza et al., (2016) who found a direct positive effect of mostly family support on depression among individuals with stressful life events as well as the deductions from the systematic literature review by Tough, Siegrist and Fekete (2017). Other studies consistent with the current study include those of Jalali-farahani et al., (2018); Wang et al., (2018) and Yohannes et al. (2018). It important to note that, even though the relationship between friend support and PTSD, and lack of confidence were negative, they were not significant ($p > .05$). In all, the association of friend support with psychosocial problems were somehow weak, compared with other forms of support, extenuating the non-significance of perceived friend support in the Ghanaian culture.

It was also hypothesized that, PSS will show significant relationship with stress appraisal and how individuals with RTA injuries will cope. On the relationship with stress appraisal, the findings (from correlation) showed that, negative appraisals (threat and uncontrollability) negatively correlated with PSS. There was however positive relationships between total PSS and appraisal of challenge (.16, $p < .001$) and controllable by others (.33, $p < .001$). This means that, individuals with low levels of PSS are likely to exhibit worse appraisals, and think their stress

cannot be overcome, which can lead to negative psychological outcomes. In contrast, those with high levels of PSS believe they can receive help from other people, especially their family members and other special people in their lives, and as such positively appraise their stress. Interestingly, appraisal of controllable by self was negatively related with total PSS, family support and special other support, though correlations were not significant (all *p*s > 05).

On the relationship with coping, the results from the correlation indicated that, TOC was significantly and positively related with TPSS and all subscales of PSS. All other associations were negative and insignificant, except the relationship between avoidant coping and family support, which showed a positive non-significant correlation. This means that, individuals with perceived adequate support from their family members are likely to adapt well with their situation. This may be linked to a sense of self efficacy with family presence. According to the self efficacy theory, individuals who believe they can exercise control over threats or stressors do not conjure up disturbing thought patterns. They believe their capabilities can produce designated levels of performance, and as such, approach difficult situations as a challenge (as seen under section of discussion labeled "appraisal and psychosocial problems") that must be managed objectively rather than seeing them as threat and avoiding them. They believe their coping abilities can worsen the stress and psychological experience or make it better. Central to developing self efficacy is social persuasion (Bandura, 1994; Zulkosky, 2009). The encouragement and other assistance that the injured patients, especially those with fractures may receive from the close relatives or important others in managing their respective problems or to rehabilitate can make them see their stress as a challenge, but not a threat, harm or loss. Again, social support usually enables victims of traumatic experience to freely express their negative emotions, thereby fostering a positive outcome (Tedeschi & Calhoun, 1996). Expectedly, individuals with comparably adequate PSS,

positive appraisal and adaptive coping exhibited positive psychological wellbeing. The findings of the study support some previous studies (Cao et al., 2018; Kaniasty, 2012; Szkody & McKinney, 2020) that have asserted that people with adequate social support are able to cope well and maintain or regain relatively healthy psychological health. Thus, the high levels of social support among respondents, coupled with high levels of adaptive coping styles, and high levels of positive appraisals may as well account for the seemingly low levels of psychosocial problems in the current study compared with similar studies from other sub-Sahara African countries and some other western countries.

According to the buffering effect hypotheses of PSS, during stressful situations, social support is able to safeguard victims against any negative influence that may be posed by the stressor. Impliedly, dependence on social support can avert the feelings of hopelessness, helplessness or dejection and provides some level of stability during such negative life events (J. Cohen, 1984). It is therefore very common to see people seeking for social support during stressful life circumstances. Thus, the theory on the buffering effect hypothesis presupposes that, social support can function as a moderating variable that may impact coping mechanisms towards a stressor. In tandem with this propositions, the study hypothesized that PSS will moderate the relationship between coping styles and psychosocial outcomes.

Hierarchical multiple regression analysis was conducted for this hypotheses. However, since there was a non-significant correlation between coping and PTSD, the analysis for PTSD was omitted. Consistent with the theoretical perspectives, the findings indicated that, high levels of PSS demonstrated significant moderating effect on psychosocial distress in relation to avoidant coping. However, in contrast to theoretical expectations (Cohen, 1984; Lazarus & Folkman, 1984, 1986) and findings from studies reviewed on the buffering effect of perceived social support (Dodd

et al., 2015; Jalali-Farahani et al., 2018; Machisa et al., 2018) the interaction effect was positive. Meaning, in the presence of perceived social support, avoidant coping styles are likely to cause more distress. This may imply that, individuals who utilize avoidant coping style may be psychologically "better" without available social support. But, demonstrating high levels of avoidant coping styles in the presence of social support may produce a negative outcome. It could also mean that, individuals who expect high levels of social support whilst utilizing avoidant coping style may end up becoming more distressed. This phenomenon could be related to the negative effects of social support on psychological wellbeing as some sources of social support may rather act as extra stressors rather than buffers (Mathieson, 2003). Explaining further, social support does not always produce positive effect but may rather be problematic after a stressful life event since providing and receiving support may demand significant emotional cost, especially for individuals who are in themselves affected by the event and may as well be in need of support (Solomon & Smith, 1994). Again, the unique social needs of victims with traumatic injury may lead to conflict withdrawal by network members who may become infuriated with the victim, feel overburdened in managing the stress or sometimes be inadequately prepared to support the victim to cope with his stress (Nolen-Hoeksema & Davis, 1999). In summary, social support may be helpful, but does not always buffer negative events that may lead to psychological distress.

CHAPTER SIX

SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter is the last chapter of this project. The chapter presents the summary, implications of the study, the study limitations, concluding statement and recommendations from the study.

6.1 Summary

Traumatic injuries are major economic and health concerns globally. Essentially, injuries from RTAs are major cause of these socio-economic and health related problems. One critical concern is the psychosocial consequences of these injuries in respective victims. In a country where the incidence of RTA and its related injuries are overwhelming, the study sought to investigate the psychosocial problems that could result from these phenomenon, whilst considering factors such as stress appraisals, coping and social support that could influence psychosocial problems in the Ghanaian culture. The investigator adapted the concepts in the transactional stress theory by Lazarus and Folkman to guide the framework of the study.

Extensive review of literature was done in five thematic areas: traumatic injuries and psychosocial problems, patient factors associated with psychosocial problems, injury appraisal and psychosocial problems, coping styles and psychosocial problems and the influence of social support in the development of psychosocial problems. A cross sectional survey design was used to achieve the purpose and objectives of this study. A total of 425 RTA victims with injuries were sampled conveniently in the Kumasi metropolis from three hospitals: KATH, Tafo Government Hospital and Manhyia District Hospital. Five validated scales measuring appraisal, coping,

perceived social support, PTSD and psychosocial distress were used to develop a structured questionnaire for the study. Patients' background characteristics including their demographic and clinical/injury information were also gathered. Ethic clearance was obtained from two reputable institutions: the Ghana Health Service Ethics Review Board and the KATH Institutional Review Board with permission letters from the school of Nursing and Midwifery, University of Ghana. With the help of five well trained research assistants, data was collected from the three study sites for five months (at Manhyia and Tafo Hospitals) and six weeks (at KATH). At the end of the data collection process, 382 questionnaires were found to be complete and used for analysis.

The Statistical Package for Social Sciences (SPSS) version 21 was used for the analysis process. Data was thoroughly cleaned visually and statistically, using frequencies. Data was assessed for normality and other assumptions of parametric tests. Descriptive statistics, including frequencies, means and standard deviations were used to describe the data. Inferential statistics, including the Pearson's chi-square, ANOVA, Independent sample t-Test, Pearson's Product-Moment Correlation and Hierarchical Multiple Regression were used to test for the hypotheses established in the study.

The study findings revealed that, most of the victims were males (63.3%) with a mean age of 36 years. More than half (72%) of the respondents were hospitalized and 54.7% were involved in vehicular accidents. In relation to injury characteristics, almost half (49.5%) of the respondents sustained injuries to the lower limbs, with approximately 66% sustaining fractures of various types. The study further revealed that, most victims appraised their injuries negatively (as threat, or centrality) but believed their stress (injuries) were controllable, mostly by themselves. The common coping style identified was task oriented coping (M = 19.37) and the least coping style used was avoidant coping (M = 13.58). The level of perceived social support was moderate to high

(*M* = 60.34), with most perceived support from the family. In all, the prevalence of psychosocial problems in the respondents were 40.6% and 22% for psychosocial distress and PTSD respectively. The Pearson's chi square test indicated no associations between demographic variables and psychosocial problems, but injury characteristics were found to be significantly associated with psychosocial outcomes. With ANOVA test, significant variations were found between categories of injury characteristics (type, location and duration) and psychosocial problems. Hospitalized patients were also found to experience psychosocial distress and PTSD more than non-hospitalized patients. Negative stress appraisals positively and significantly correlated with psychosocial problems whilst positive appraisals positively and significant correlated with psychosocial problems. On coping, the study revealed that, avoidant and task oriented coping negatively correlated psychosocial problems, whilst emotion focused coping positively correlated psychosocial problems. Victims with adequate perceived social support demonstrated increased psychosocial wellbeing. Interesting result was obtained for the moderation analysis conducted to examine the moderation effect of social support on the relationship between avoidant coping and psychosocial distress. The results indicated that, social support significantly moderated avoidant coping, but positively, meaning that, victims with injuries who utilized avoidant coping in spite of adequate perceived social support are likely to experience psychosocial problems.

6.2 Implications

The findings of the current study have a lot of implications on nursing practice, nursing management, education and nursing research.

6.2.1 Nursing Practice and Management

A good number of RTA patients with injuries experience psychosocial problems, notably depression/anxiety, social dysfunction, lack of confidence and PTSD. The study identified factors that can promote or worsen psychosocial health of RTA victims with injuries. If these problems are identified earlier, most victims will be well managed psychologically, which can as well promote early healing time, especially in patients with Orthopaedic injuries. Since nurses provide the most direct care and maintain the closest contact with these victims either on hospitalization or after discharge, they can play crucial role in identifying such victims. Impliedly, staff working on such victims should frequently assess patients with traumatic injuries for psychosocial problems. Nurse Managers and heads of such units or institutions can play pivotal role by providing tools aimed at assessing psychosocial problems to be included in the care of such patients.

With the vital role played by perceived social support in the psychosocial health of patients, nurses need to identify and educate relatives, friends and other significant people in the life of injured victims on the need to provide the needed support to such victims. Practicing nurses working on trauma patients to use family-centered care for such patients for effective care. Nurses should also assess and identify how patients cope with stress and tailor health education on the consequences of such coping styles on their overall health. In the nutshell, the study buttresses the need for thorough psychological, social and economic assessment of RTA victims with traumatic injuries, even after discharge or recovery.

6.2.2 Nursing Education

The study has established that, psychosocial problems are prevalent in injured populations in Ghana. However, almost all nurses providing care to such patients have little or no training on

psychosocial assessment. There is therefore a need to include this component in students' curriculum to well prepare them before graduating. Continuous professional development programmes on psychosocial assessment and care should also be intermittently organized especially for staff working in emergency and orthopedic wards who mostly work on such victims. Practicing nurses and student nurses should as well be trained on the use of family-centered care for RTA victims. Again, nursing education in Ghana and other parts of Africa should consider developing curriculum and training nurses to specialize in trauma care, to enhance a holistic care for such patients.

6.2.3 Nursing Research

This study, to best of the knowledge of the researcher was the first of its type to be conducted Ghana, especially using non-TBI and SCI patients. Most importantly, assessing stress appraisal, coping styles and social support in Ghanaian and African studies is limited. The study will therefore add to the existing literature by providing information on the topic from the Ghanaian perspective. It is however imperative to close this gap in Ghana and Africa to adequately establish literature in these fields, as there were contrasting findings from this study compared to studies from western cultures. Hospitalized patients were found to have significantly high levels of psychosocial problems compared to non-hospitalized patients. This could be related to cost of care, length of stay and other factors described in the study. It will therefore be prudent to investigate these factors and their effects on the psychosocial health of the trauma victim.

6.3 Limitations

The study findings are quite promising for physical trauma care in Ghana, importantly since it is the first of its type. The large sample size of the current study is a credit for the study. However, it is important to note that the current study has its limitations, and the findings are to

be appreciated in veneration of such limitations. First, the study methodology employed a cross-sectional design. This design is convenient and enables researchers take a snap shot of a population within a specified time in a more affordable way. However, cross-sectional studies cannot establish causal effects among variables.

Again, even though the study was conducted in three different facilities, all these facilities were within the Kumasi metropolis and may not be representative of the whole situation in Ghana. Further, the data could be prone to biases since data was collected via self-reports. This is however similar to methods employed in previous studies as reviewed in previous sections (e.g. Ahl et al., 2017; Ajibade et al., 2015; Kendrick et al., 2017; Obayemi et al., 2020). Nonetheless, modern researchers argue that self-reported data are valid and may be reflective of the respondents' actual experiences as people correctly perceive their social environment and experiences. The researcher is however limited in evincing that these reported measures of cognition and psychosocial problems are predictors of their objective measures. Moreover, most of the scales used in the study (CISS-21, SAM and primary care PTSD screen) had not been validated in a similar population in Ghana. Evidently, some subscales (lack of confidence and PTSD) performed poorly during the actual data collection and could have affected the results of the study. As such, the findings from those scales need to be used with caution. However, caution was taken to ensure that the scales were clear and unambiguous, and that, participants understood the items on the scales well before responding to them. Again, due to time constraints, other important analysis like mediating effects of appraisal and coping on the relationship between stress and psychosocial outcomes were omitted. Future studies can look at these omissions. Additionally, the measure of coping styles were only restricted to avoidant, emotion focused and task oriented coping. Future research may also consider the link between other coping styles like the religious coping, and more importantly,

the sub categories of emotion focused coping (constructive and non-constructive) styles and psychosocial health.

Last but not least, the outbreak of the novel COVID-19 disease significantly affected the recruitment process, restricting the researcher to use convenient sampling technique throughout the study process as patient census (especially RTA cases). As such, participants may be self-selecting and the results may not be representative of others.

6.4 Conclusion

The focus of this study was to assess the psychosocial problems of RTA related injuries in Kumasi, Ghana. The findings of the study has provided empirical evidence of the prevalence of psychosocial problems in the study population. More so, the study indicated that, RTA related injuries generate various cognitive appraisal mechanisms and varied coping strategies which directly influence psychosocial health. Again, the current study extensively demonstrated the significant role played by social network on how victims of RTA with traumatic injuries appraise their injuries, cope with such injuries and their potential or actual consequences and the development of any psychosocial problems. These findings largely fitted into the theoretical framework and significantly supported literature reviewed, irrespective of some few contrasting results.

In life, there are bound to be unexpected, unpleasant, stressful events such as RTAs and other traumatic injuries, nevertheless, one ought to learn to be resilient and overcome such events. One's inability to react "normally" to such stressful events or overcome them effectively can have dire consequences on their psychological, physiological and social functioning as revealed by the study. There was a good evidence to support the above claim. This calls for an ardent need to promptly assess and identify at risk patients so as to help them develop the right coping styles and

adjustments. In addition, care providers need to make psychological treatment options readily available to help these patients manage their conditions better.

The study findings were discussed in relation to what they may indicate about the role of traumatic injuries in developing psychosocial problems. A couple of limitations that could affect utilization of the study were also elaborated. Generally, the current study has highlighted the significant role of various types of injuries from RTA in the psychosocial health of such victims, and more importantly, the roles played by cognitive appraisal, coping and perceived social support. Finally, a lot of areas are left uncovered in the holistic care of the trauma victims, therefore, future studies can expand on this work by adding qualitative design and/or conducting longitudinal studies.

6.5 Recommendations

Based on the findings from this study, the following recommendations are made for clinicians, especially at the study sites, nursing and midwifery institutions, the Nursing and Midwifery Council of Ghana as well as the government of Ghana.

6.5.1 KATH, Manhyia and Tafo Hospitals and other Clinicians

Clinicians play pivotal role in managing trauma victims. Early identification of psychiatric sequel can do greater good to the nation and the individual involved in the event. It is therefore recommended that:

- Clinicians should routinely assess all trauma victims for possible development and symptoms of psychological problems, whilst managing their physical problems.
- Clinicians working on trauma victims should liaise with other care providers such as mental health nurses and clinical psychologists to conduct intermittent comprehensive

psychosocial assessment on patients with RTA injuries, especially those that result in major disabilities and/or may require prolonged hospitalization.

- General practitioners at emergency and orthopedic wards should work hand in hand with the family members and other significant people of the injured victim so as to promote good psychosocial wellbeing.
- Nurses who work on patients on outpatient basis (wound dressing units) should also assess for psychosocial problems during visit of injured patients as the study indicated that, some OPD patients are also at risk for psychosocial problems.
- Such staff therefore need to develop their assessment skills so as to be able to competently assess patients with RTA injuries.

6.5.2 Nursing and Midwifery Council of Ghana

The Nursing and Midwifery Council, which is the regulatory body of nursing practice and education in Ghana will play a crucial role in implementing the outcome of the current study by

- reviewing the current curriculum for the training of all cadre of nurses, including post-basic levels to include comprehensive psychosocial assessment competencies.
- collaborating with post basic training schools, to develop curriculum and train specialized nurses in trauma care.
- collaborating with the MOH, GHS and nurse practitioners in designing and implementing standard psychosocial assessment tools to be used in Ghanaian hospitals.

6.5.3 Nurse Researchers

- Other researchers should consider employing longitudinal studies to ascertain the influence of passing time on psychosocial problems.

- Future researchers can also employ a qualitative study or a combination of quantitative and qualitative studies to get in-depth understanding of some of the findings in the Ghanaian context.
- This study can also be replicated in other parts of the country or researchers can consider conducting a nationwide survey to get a good representation of the problem nationally.
- Further, it is recommended for future researchers to include the social circles or immediate care givers of RTA injured victims as they are as important as the victims in the experience and management of the injuries.
- Researchers should also consider conducting studies aimed at validating available psychosocial assessment tools in Ghana or to develop tools that best fit the Ghanaian context.

6.5.4 Government and Policy Makers

The study results indicate that, people living with disability from psychological problems as a result of RTA injuries is likely to be increasing. For example, with studies suggesting that 10-25% of patients who develop PTSD from traumatic injuries could develop chronic unrelenting consequences, it could be inferred that, in 2019, for 16,400 injuries sustained from RTA, between 360 and 902 victims may develop chronic PSTD for that year alone, most of whom may not have been identified for treatment. Therefore, to meet the WHO's objective of "Enhancing Country Action on Mental Health" as part of the Mental Health Gap Action Programme (mhGAP) (WHO, 2019), early identification could be crucial. Due to these, it is recommended that;

- there should be a data of all patients that sustained injuries from RTAs so as to intermittently follow up on them to detect any untoward outcome.

- programmes should be designed to treat RTA victims who suffer long term impacts of injury, like PTSD and depression.
- government should provide grants for researchers to be able to conduct nationwide survey on the psychosocial problems of RTA injured victims.

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APPENDICES

APPENDIX A: CERTIFICATE OF REGISTRATION AT KATH

KOMFO ANOKYE TEACHING HOSPITAL

RESEARCH AND DEVELOPMENT UNIT (R & D)

CERTIFICATE OF REGISTRATION

REG. NO: RD/CR19/251

This is to certify that

Prof/Dr/Mrs/Mr/Ms Assah Augustine Yaw

has registered his/her proposed study titled Psychosocial Effects of Traumatic Injuries in Road Traffic Accident Victims in the Kumasi Metropolis

with the Research and Development Unit.

Date of issue: 23-December-2019 Date of expiry: 23-December-2020

Deputy Director for Research

Dr Kwadwo Sarbeng

Signature

K/19/0278937

*Receipt number

Note

This certificate does not constitute ethical clearance for the conduct of the study but proof of registration of study with KATH. Ethical clearance from the KATH Institutional Review Board (KATH-IRB) is required to conduct the study at KATH.

Version RD/REG-11TH DECEMBER, 2019

APPENDIX B: ETHICAL CLEARANCE

KOMFO ANOKYE
TEACHING HOSPITAL

P. O. Box 1934
KUMASI - GHANA
Tel: +233 - 3220 - 22301- 4
Fax: +233 - 3220 - 24654/24621
Website: www.kathhsp.org

KATH-IRB/AP/009/20

Our Ref. No:.....

Your Ref. No:.....

Komfo Anokye Teaching Hospital Institutional Review Board

8th April 2020

Mr. Augustine Yaw Assah,
University of Ghana,
School of Nursing and Midwifery,
Mental Health Department.

Dear Mr. Assah,

Ethics Approval

Protocol title:	Psychosocial Effects of Traumatic Injuries in Road Traffic Accident Victims in the Kumasi Metropolis.
Study site:	Emergency Medicine, Family Medicine and the Trauma & Orthopaedic Directorates of the Komfo Anokye Teaching Hospital, Kumasi, Ghana.
Sponsor:	Self-funded.

We are writing in response to the clarifications and revised documents following review by the Komfo Anokye Teaching Hospital Institutional Review Board (KATH IRB) in respect of the research study referenced above.

We are pleased to inform you that KATH IRB, per your correspondence of 17th March 2020, has given approval for the following study documents:

- Protocol version *1.1 last updated on 17th March 2020*
- Informed Consent form version *1.1 last updated on 17th March 2020*
- Case Report Form version *1.0 last updated on 15th January 2020*

Approval for the study is in effect until 7th April 2021 and it is the responsibility of the Principal Investigator to maintain the study in good standing at the Komfo Anokye Teaching Hospital. The Board anticipates to be notified of the actual start date of your project.

Prior to the expiration of the study approval, you must submit to the KATH-IRB an "Application for Continuing Review" along with provision of "Annual Report" when the study is ongoing, or a "Termination Report" if the research has been completed.

You must hastily report to the KATH-IRB should a modification to the research be proposed, and without delay if an unanticipated development occurs before the next required review. Regulations do not permit you to modify conduct of the study in its present form prior to ethics

A Centre of Excellence

approval; except where urgent action is required to eliminate an apparent immediate hazard to a study subject or other person. It is of utmost importance data generated from this study must be used for the intended purposes only.

Thank you.

Sincerely,

Prof. Kwabena Antwi Danso, BSc, MB ChB, FWACS, FGCS, FACOG
Chairman, KATH-IRB

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
GPS Address: GA-050-3303
Tel: +233-302-681109
Fax + 233-302-685424
Mob + 233- 050-3539896
Email: ethics.research@ghsmail.org

MyRef. GHS/RDD/ERC/Admin/App/19/632
Your Ref. No.

22nd November, 2019

Augustine Yaw Assah
School of Nursing and Midwifery
College of Health Sciences
Department of Mental Health
University of Ghana

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC047/11/19**
Project Title	Psychosocial Effects of Traumatic Injuries in Road Traffic Accident Victims in the Kumasi Metropolis
Approval Date	22nd November, 2019
Expiry Date	21st November, 2020
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
Dr. Cynthia Bannerman
(GHS-ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

APPENDIX C: APPROVAL/PERMISSION LETTERS

KOMFO ANOKYE
TEACHING HOSPITAL

P. O. Box 1934
Kumasi - Ghana
Tel: +233 - 3200-22301 - 4
Fax: +233 - 3220-24654 / 24621
Website: www.kathhsp.org

Our Ref. No.: KATH/FMD/39

Your Ref... No:.....

23rd April, 2020

AUGUSTINE YAW ASSAH
(STUDENT INVESTIGATOR)
SCHOOL OF NURSING AND MIDWIFERY
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

APROVAL FOR RESEARCH

I approve that the research study titled **"Psychosocial effects of traumatic injuries in road traffic accident victims in the Kumasi Metropolis"** is carried out at the Family Medicine Directorate (Dressing Unit), Komfo Anokye Teaching Hospital.

I trust that the Directorate will be given a copy of the results of the study.

Thank you.

DR. EMMANUEL ATI
LEAD CLINICIAN
FAMILY MEDICINE DIRECTORATE

A Centre of Excellence

In case of reply the number
and the date of this letter
should be quoted

My Ref: GHS/ASH/REG/N.2
Your Ref. No:

Tel: 22089/23651
Fax:
E-mail: rdhs.ar@yahoo.com

GHANA HEALTH SERVICE

Your Health - Our Concern

GHANA HEALTH SERVICE
REG HEALTH DIRECTORATE
P. O. BOX 1908
KUMASI

20TH JANUARY, 2020

THE METRO DIRECTOR
METRO HEALTH DIRECTORATE
KUMASI

APPROVAL TO ACCESS PARTICIPANTS FOR RESEARCH PURPOSES

This is to officially inform you that approval has been granted to Mr. Augustine Yaw Assah (Student Investigator) to access physically injured patients who were involved in road traffic accident in the Kumasi Metropolis.

He is conducting a study titled **"Psychosocial Effects of Traumatic Injuries in Road Traffic Accident Victims in the Kumasi Metropolis".**

The selected sites for the study are **Tafo and Manhyia Hospitals.**

Please offer him the necessary assistance he may need.

Thank you.

DR. EMMANUEL K. TINKORANG
REG. DIR. OF HEALTH SERVICE
ASHANTI

cc: The Medical Superintendent
Tafo Hospital
Kumasi

The Medical Superintendent
Manhyia Hospital
Kumasi

APPENDIX D: INTRODUCTORY LETTERS

UNIVERSITY OF GHANA
DEPARTMENT OF MENTAL HEALTH
SCHOOL OF NURSING

Ref. No.:.....

31st January, 2020

The Medical Director
Tafo Hospital
Kumasi.

Dear Sir/Madam,

Letter of Introduction

The bearer of this letter, Mr. Augustine Yaw Assah, is a graduate student of the School of Nursing and Midwifery, University of Ghana who is seeking to conduct a study "Psychosocial effects of traumatic injuries in road traffic accident victims in the Kumasi Metropolis."

The study, which is in fulfillment for the award of Master of Philosophy degree in Nursing, will be conducted among patients who have been involved in road traffic accident in the Kumasi Metropolis. Questionnaires will be administered to obtain the responses of the participants.

I will be grateful if you could grant the candidate the permission to collect data from the Tafo Hospital.

For further information, do not hesitate to contact me at sadjorlolo@ug.edu.gh or 0204197158

Counting on your Cooperation.
Regards.

Dr. Samuel Adjorlolo
Supervisor, and AG. Head of Department

COLLEGE OF HEALTH SCIENCES
• P. O. Box LG 43, Legon, Accra, Ghana. • Telephone: +233 (0) 302 513 250 / 0289 531 213

UNIVERSITY OF GHANA
DEPARTMENT OF MENTAL HEALTH
SCHOOL OF NURSING

Ref. No.:.....

31st January, 2020

The Medical Director
Manhyia District Hospital
Kumasi.

Dear Sir/Madam,

Letter of Introduction

The bearer of this letter, Mr. Augustine Yaw Assah, is a graduate student of the School of Nursing and Midwifery, University of Ghana who is seeking to conduct a study "Psychosocial effects of traumatic injuries in road traffic accident victims in the Kumasi Metropolis."

The study, which is in fulfillment for the award of Master of Philosophy degree in Nursing, will be conducted among patients who have been involved in road traffic accident in the Kumasi Metropolis. Questionnaires will be administered to obtain the responses of the participants.

I will be grateful if you could grant the candidate the permission to collect data from the Manhyia District Hospital.

For further information, do not hesitate to contact me at sadjorlolo@ug.edu.gh or 0204197158

Counting on your Cooperation.
Regards.

Dr. Samuel Adjorlolo
Supervisor, and AG. Head of Department

COLLEGE OF HEALTH SCIENCES
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APPENDIX E: PARTICIPANT INFORMATION SHEET

PARTICIPANT INFORMATION SHEET

Title of the study: Psychosocial effects of traumatic injuries in road traffic accident victims in the Kumasi Metropolis.

Principal Investigator: Augustine Yaw Assah (Student, MPhil Nursing)

Address: School of Nursing and Midwifery, University of Ghana-Legon, P.O Box LG 84, Accra

Tel: +233 206662448 Email: ayassah@st.ug.edu.gh

General Information about research

This study is to investigate the psychosocial effects of traumatic injuries in patients involved in road traffic accident in the Kumasi Metropolis. It is a pure academic activity fully funded by the principal investigator. Thus, the study seeks to identify the social and emotional problems experienced by patients who sustain injuries after road traffic accidents. All persons involved in this study are professional nurses who are either teaching in nursing schools (in the academic field) or working on the wards (clinical field). You have been selected to voluntarily participate in this study because you meet the criteria for participation. We would like you to provide your honest response to the questionnaires regarding your social and emotional experiences after your injury. If you accept to respond to the questionnaire, you will be required to sign two copies of this form (one to be kept by you and the other will be with me). You will also be required to give your consent to partake in the study. Thereafter, you will be given one of the study questionnaires and then given ample time to respond to them at your own convenience. The questionnaire shall take between 30 to 45 minutes to complete. Any clarification you may need will be addressed promptly.

Possible risks and discomforts

There are no anticipated risks nor costs associated with the study and you will not be required to engage in any physical or experimental activity. This notwithstanding, you will be required to devote some few minutes of your time to respond to the questions you will be given. It is also possible that some questions may be sensitive or upsetting to you. In such cases, you are at

liberty to refuse to provide answers to such questions and you would be given the necessary support thereof.

Possible benefits

This study does not provide the participant with any direct or personal benefit in the form of money or material things. It is however expected that the findings of the study will provide information that will benefit the larger population and will help policy makers to make necessary interventions in the support of physically injured persons and their families. You will also be given the opportunity to ask questions related to psychosocial health that may be of benefit to you.

Costs

Your participation in this study will not incur any cost on you whatsoever. You are not required to undertake any activity that may incur any cost on you such as travelling to submit the answered questionnaires in the case you need to take them home.

Compensation

There will not be any compensation for your time or the information you may provide in any form. ***You will however be given a soft drink (bottled malt) with pie as a form of refreshment for your precious time dedicated in responding to the study questionnaire.***

Confidentiality

Any identifiable information that is obtained in connection with this study will be treated as confidential and will be disclosed only with the permission of the participants. You are also entreated from writing your name, patient number or any identifier that can reveal your identity to a third party on the questionnaire. The information that will be gathered will only be accessible to the researcher (and his assistants), supervisors, School of Graduate Studies of the University of Ghana, Ghana Health Services, Komfo Anokye Teaching Hospital as well as any academic journal that will accept to publish this study. In the case where the results of the research are published or discussed in any conference, no information will be included to reveal

the identity of the participants unless specific consent is sought. The final raw date will be stored on a computer protected by a password which will only be privy to the researcher or the supervisor.

Voluntary participation and right to leave the research

Your participation in this research is voluntary. Your right to ask further questions to clear any doubt about any aspect of the study before agreeing to participated is also highly respected. If you choose to participate, you are at liberty to withdraw from the study at any point in time.

Your withdrawal will have no any effect on the care you receive at the facility.

Contacts Persons for Further Clarification/Questions

Name: Augustine Yaw Assah (Student/Principal Investigator)

Contact: +233 206662448 / Email: ayassah@st.ug.edu.gh

Name: Dr. Paa kobina Forson (Local Collaborator)

Contact: +233 206300730 / Email: paakforson@gmail.com

Name: Dr. Samuel Adjorlolo (Supervisor)

Contact: +233 204197158 / Email: sadjorlolo@ug.edu.gh

For any other information or clarification on ethical issues and your right as a participant, please contact:

The Administrator

Name: Nana Abena Kwaa Ansah Apatu

Contact: +233 503539896 / Email: ethics.research@ghsmail.org

Ethics Review Committee

Ghana Health Services.

APPENDIX F: CONSENT FORMS

CONSENT FORM

STUDY TITLE: PSYCHOSOCIAL EFFECTS OF TRAUMATIC INJURIES IN ROAD TRAFFIC ACCIDENT VICTIMS IN THE KUMASI METROPOLIS.

PARTICIPANT'S STATEMENT AND SIGNATURE/THUMB PRINT

I acknowledge that, I have thoroughly read or have had the information on the Participants' Information Sheet read and satisfactorily explained to me in a language I understand:

(English [ ], Twi [ ] Other [ ] {specify_____}).

I declare that, I have fully understood the contents and purpose of the said sheet as well as any possible consequence of the study. I also have been informed and I understand that, I am at liberty to change my mind or to withdraw from the study at any time even after I have signed or thumb printed this form. I have also been made to understand that, I shall be given a copy of the information sheet as well as the signed / thumb printed consent form for my personal records before administration of the study questionnaires.

I voluntarily agree to be part of this research.

Name or Initials of Participant..... ID Code .....

Participants' Signature .....OR Thumb Print.....

Date:.....

INTERPRETER'S STATEMENT AND SIGNATURE

I have interpreted the purpose and contents of the Participants' Information Sheet to the afore named participant to the best of my ability in the

(English [ ], Twi [ ] Other [ ] {specify_____}) language to his proper understanding.

All questions, appropriate clarifications sought by the participant have been addressed by the researcher and answers were also duly interpreted to his/her satisfaction.

Name of Interpreter……

Signature of Interpreter…… Date:……

Contact Details:

STATEMENT OF WITNESS AND SIGNATURE

I was present when the purpose and contents of the Participant Information Sheet was read and explained satisfactorily to the participant in the (English [ ], Twi [ ] Other [ ] {specify_____}) language of which he/she understands better.

I confirm that he/she was given the opportunity to ask questions/seek clarifications and same were duly answered to his/her satisfaction before voluntarily agreeing to be part of the research.

Name: ……

Signature…….. OR Thumb Print ……

Date:……

INVESTIGATOR STATEMENT AND SIGNATURE

I certify that, the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name.....

Signature .....

Date.....

APPENDIX G: RESEARCH QUESTIONNAIRE MODEL

RESEARCH QUESTIONNAIRE MODEL

This questionnaire forms part of the study that seeks to investigate the psychosocial problems patients encounter with injuries sustained during road traffic accidents. As one of such individuals, your contribution will be very pivotal in drawing conclusions for this study. It is however assured that, the information gathered will be handled with the utmost confidentiality as much as possible and shall only be used for the purpose of this study. You are kindly requested to be candid as much as possible.

Please answer the following questions by selecting options that most apply to you.

Section A: Demographic Information

Please kindly provide some information about yourself. Select appropriately using a mark [√]

1. Gender: Male___ Female:___ Transgender ____
2. Age (years): 18-25 ___ 26-35___ 36-45 ___ 46-55 ___ 56-65___ Above 65___
3. Educational level: None___ Primary ___ JHS ___ SHS ___ Tertiary ___
4. Marital Status: Single ___ Married ___ Divorced ___ Widowed ___ Co-habiting ___
5. Religious Affiliation: Christian ___ Muslim ___ Traditionalist ___ None ___ Other (specify) _____
6. Ethnicity: Akan ___ Northerner ___ Ga/Dangme ___ Ewe ___ Other (specify) _____
7. Occupation: Civil servant ___ Self-employed ___ Farmer ___ Unemployed _____ Student ___ Other (Specify) _____

Section B: Injury characteristics

1. Type of RTA: Vehicle ___ Motor bicycle ___ Bicycle ___ Tricycle: (Pragya)____ (Aboboyaa) ___
2. Type of Victim: Driver/Rider ___ Passenger ___ Pedestrian ___
3. Type of Injury:
4. Duration of injury: Less than 2 weeks ___ 2-4 weeks ___ 1-3 months ___ 3-6 months ___ above 6 months ___ (Specify) _____

Part C: Stress Appraisal Measure (SAM)

This section is concerned with your thoughts about various aspects of the situation identified previously. There are no right or wrong answers. Please respond according to how you view this situation right NOW. Please answer ALL questions. Answer each question by CIRCLING the appropriate number corresponding to the following scale.

1	2	3	4	5
Not at All	Slightly	Moderately	Considerably	Extremely

1. Is this a totally hopeless situation?	1	2	3	4	5
2. Does this situation create tension in me?	1	2	3	4	5
3. Is the outcome of this situation uncontrollable by anyone	1	2	3	4	5
4. Is there someone or some agency I can turn to for help if I need it?	1	2	3	4	5
5. Does this situation make me feel anxious?	1	2	3	4	5
6. Does this situation have important consequences for me?	1	2	3	4	5
7. Is this going to have a positive impact on me?	1	2	3	4	5
8. How eager am I to tackle this problem?	1	2	3	4	5
9. How much will I be affected by the outcome of this situation?	1	2	3	4	5
10. To what extent can I become a stronger person because of this problem?	1	2	3	4	5
11. Will the outcome of this situation be negative?	1	2	3	4	5
12. Do I have the ability to do well in this situation?	1	2	3	4	5
13. Does this situation have serious implications for me?	1	2	3	4	5
14. Do I have what it takes to do well in this situation?	1	2	3	4	5

15. Is there help available to me for dealing with this problem?	1	2	3	4	5
16. Does this situation tax or exceed my coping resources?	1	2	3	4	5
17. Are there sufficient resources available to help me in dealing with this situation?	1	2	3	4	5
18. Is it beyond anyone's power to do anything about this situation?	1	2	3	4	5
19. To what extent am I excited thinking about the outcome of this situation?	1	2	3	4	5
20. How threatening is this situation?	1	2	3	4	5
21. Is the problem unresolvable by anyone?	1	2	3	4	5
22. Will I be able to overcome the problem?	1	2	3	4	5
23. Is there anyone who can help me to manage this problem?	1	2	3	4	5
24. To what extent do I perceive this situation as stressful?	1	2	3	4	5
25. Do I have the skills necessary to achieve a successful outcome to this situation?	1	2	3	4	5
26. To what extent does this event require coping efforts on my part?	1	2	3	4	5
27. Does this situation have long-term consequences for me?	1	2	3	4	5
28. Is this going to have a negative impact on me?	1	2	3	4	5

Part D: Coping

We are interested in how you have been coping with stress in your life since your injury. The questionnaire asks you to indicate what you generally do and feel, when you have a stress like this one. Respond to each of the following items by circling one number on your sheet for each, using respond choices listed just below. Choose your answers thoughtfully, but make your answers as true for you as you can. There is no "right" or "wrong" answer, so choose the most accurate answer for you, not what you think "most people" would say or do.

1 = not at all

2 = a little

3 = somewhat

4 = much

5 = so much

1. Take time off and get away from the situation	1	2	3	4	5
2. Focus on the problem and see how I can solve it	1	2	3	4	5
3. Blame myself for having gotten into such a situation	1	2	3	4	5
4. Treat myself to a favorite food or snack	1	2	3	4	5
5. Feel anxious about not being able to cope	1	2	3	4	5
6. Think about how I solved similar problems	1	2	3	4	5
7. Visit a friend	1	2	3	4	5
8. Determine the course of action and follow it	1	2	3	4	5
9. Buy myself something	1	2	3	4	5

10. Blame myself for being too emotional about the situation	1	2	3	4	5
11. Work to understand the situation	1	2	3	4	5
12. Become very upset	1	2	3	4	5
13. Take corrective action immediately	1	2	3	4	5
14. Blame myself for not knowing what to do	1	2	3	4	5
15. Spend time with a special person	1	2	3	4	5
16. Think about the event and learn from my mistakes	1	2	3	4	5
17. Wish that I could change what had happened or how I felt	1	2	3	4	5
18. Go out for a snack or meal	1	2	3	4	5
19. Analyze my problem before reacting	1	2	3	4	5
20. Focus on my general inadequacies	1	2	3	4	5
21. Phone a friend	1	2	3	4	5

Part E: General Health Questionnaire

Please read this carefully

We would like to know after your injury/incidence how your health has been in general, over the past few weeks/days. Please answer ALL the questions on the following pages simply by underlying the answer, which you think most nearly, applies to you. Remember that we want to know about your present and recent complaints, not those that you had in the past. It is important you try answer ALL the questions.

Thank you very much for your co-operation.

HAVE YOU RECENTLY:

1. been able to concentrate on whatever you are doing?	Better than usual	About same	Less well than usual	Much less than usual
2. lost much sleep due to some worry?	Not at all	Not more than usual	Rather more than usual	Much more than usual
3. felt constantly under tension?	Not at all	Not more than usual	Rather more than usual	Much more than usual
4. felt that you could not overcome your difficulties?	Not at all	Not more than usual	Rather more than usual	Much more than usual
5. been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
6. been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
7. been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
8. felt that you are playing a useful role in life?	More so than usual	Same as usual	Less useful than usual	Much less useful

9. felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
10. been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
11. been able to face up to your problems?	More so than usual	Same as usual	Less so than usual	Much less than usual
12. been feeling reasonably happy, all things considered?	More happy	About same	Less happy	Much less happy

Part F: Primary Care PTSD Scale

We are interested in what has been happening with respect to the following questions. Please tick Yes for statements that are true and No for statements that do not apply to you. Please kindly answer all the questions.

In these past weeks/months after the injury, you:

1. Have had nightmares about it or thought about it when you did not want to?

   YES / NO

2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it? YES / NO
3. Were constantly on guard, watchful, or easily startled? YES / NO
4. Felt numb or detached from others, activities, or your surroundings? YES / NO
5. Felt guilty or unable to stop blaming yourself or others for the events or any problems the event may have caused? YES / NO

Part G: Perceived Social Support

Instructions: We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree

Circle the "2" if you Strongly Disagree

Circle the "3" if you Mildly Disagree

Circle the "4" if you are Neutral

Circle the "5" if you Mildly Agree

Circle the "6" if you Strongly Agree

Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need	1	2	3	4	5	6	7
2. There is a special person with whom I can share my joys and sorrows	1	2	3	4	5	6	7
3. My family really tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I can talk about my problems with my family.	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family is willing to help me make decisions	1	2	3	4	5	6	7
12. I can talk about my problems with my friends.	1	2	3	4	5	6	7